

# Service Manual

ViewSonic VG920  
Model No VS10790  
19" Color TFT LCD Display



**Manufacture Date: Dec-30-05**

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### Revision History

Revision	Date	Description of changes	Approval
<b>A00</b>	<b>Aug-24-05</b>	<b>Initial Release</b>	<b>YG.WANG</b>
<b>A01</b>	<b>Dec-30-05</b>	<b>Update the Handling and Placing Methods and the Circuit Description and the Adjustment Procedure</b>	<b>YG.WANG</b>

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## 1. Precautions And Safety Notices

### 1.1 SAFETY PRECAUTIONS

This monitor is manufactured and tested on a ground principle that a user's safety comes first. However, improper use or installation may cause damage to the monitor as well as the user. Carefully go over the following WARNINGS before installing and keep this guide handy.

#### WARNINGS

- . This monitor should be operated only at the correct power sources indicated on the label on the rear end of the monitor. If you're unsure of the power supply in your residence, consult your local dealer or power company.
- . Use only the special power adapter that comes with this monitor for power input.
- . Do not try to repair the monitor your self as it contains no user-serviceable parts. This monitor should only be repaired by a qualified technician.
- . Do not remove the monitor cabinet. There is high-voltage parts inside that may cause electric shock to human bodies, even when the power cord is unplugged.
- . Stop using the monitor if the cabinet is damaged. Have it checked by a service technician.
- . Put your monitor only in a clean, dry environment. If it gets wet, unplug the power cable immediately and consult your service technician.
- . Always unplug the monitor before cleaning it .Clean the cabinet with a clean, dry cloth. Apply non-ammonia based cleaner onto the cloth, not directly onto the glass screen.
- . Keep the monitor away from magnetic objects, motors, TV sets, and transformer.
- . Do not place heavy objects on the monitor or power cord.

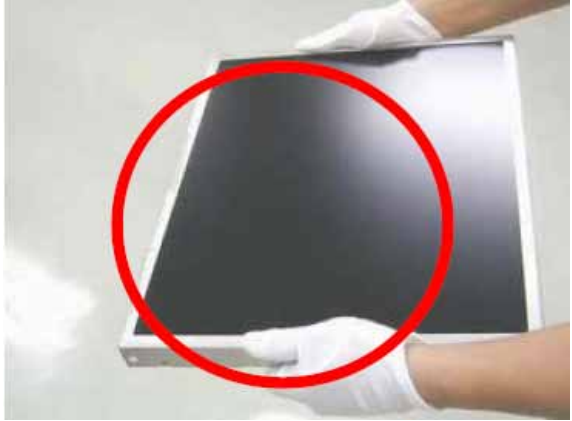




### 1.2 PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety visual inspections and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltages, wattage, etc. Before replacing any of these components read the parts list in this manual carefully. The use of substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create shock, fire ,or other hazards.

### 1.3 SERVICE NOTES

1. When replacing parts or circuit boards, clamp the lead wires around terminals before soldering.
2. When replacing a high wattage resistor(more than 1W of metal oxide film resistor) in circuit board, keep the resistor about 5mm away from circuit board.
3. Keep wires away from high voltage, high temperature components and sharp edges.
4. Keep wires in their original position so as to reduce interference.
5. Usage of this product please refer to also user's manual.

#### 1.4 HANDING AND PLACING METHODS

Correct Methods:	Incorrect Methods:
Only touch the metal frame of the LCD panel or the front cover of the monitor. Do not touch the surface of the polarizer.	Surface of the LCD panel is pressed by fingers and that may cause "Mura."
	
	
Take out the monitor with cushions	Taking out the monitor by grasping the LCD panel. That may cause "Mura."
	

Place the monitor on a clean and soft foam pad.



Placing the monitor on foreign objects. That could scratch the surface of the panel or cause "Mura."



Place the monitor on the lap, the panel surface must be upwards.



The panel is placed facedown on the lap. That may cause "Mura."



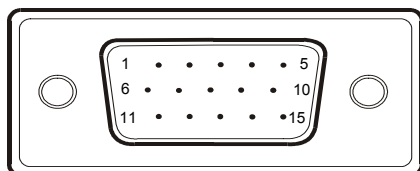
## 2. Specification

### 2.1 **PRODUCT SPECIFICATIONS**

LCD Panel	480mm (19" )TFT
Recommend Resolution	1280 x1024@60Hz
Pixel Dimension	0.294(H) x 0.294(V)mm
LCD Display Color	16.2M Colors (RGB 6-bit+FRC data)
Viewing Angle	Horizontal: 140 ° Vertical: 125 °
Contrast Ratio	550 : 1 (Typ.)
Brightness	270 cd/m <sup>2</sup> (Typ.)
Response Time	8ms(Typ.)
Active Display Area	376.32(H) x 301.06(V)
Maximum Pixel Clock	135 MHz
Horizontal Frequency	30 – 82 kHz
Vertical Refresh Rate	50 – 75 Hz.
Temperature	Operating: 0°C to +40°C Storage: -20°C to +60°C
Power Management	Energy Star compliant VESA DPMS compatible <1 W
Power	Input Voltage : 90V~264V Input Frequency : 47.5Hz~63Hz Consumption: 53 Watts(Max.) 50 Watts(Typ.)

## 2.2 INTERFACE DESCRIPTION

### D-SUB 15 PIN CONNECTOR



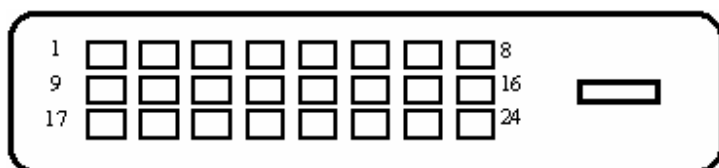
Pin Number	Pin Function
1	Red video input
2	Green video input
3	Blue video input
4	No Connection
5	Ground
6	Red video ground
7	Green video ground
8	Blue video ground
9	+5V
10	H/V sync ground
11	No connection
12	(SDA)
13	Horizontal sync (Composite sync)
14	Vertical sync
15	(SCL)

### SIGNAL LEVEL

CONNECTOR	SIGNAL	DESCRIPTION
R	RED	0.7vp-p(VIDEO)
G	GREEN	0.7vp-p(VIDEO)
B	BLUE	0.7vp-p(VIDEO)
H	H/SYNC	TTL positive or negative
V	V/SYNC	TTL positive or negative
SDA	DDC1/2B	TTL
SCL	DDC1/2B	TTL

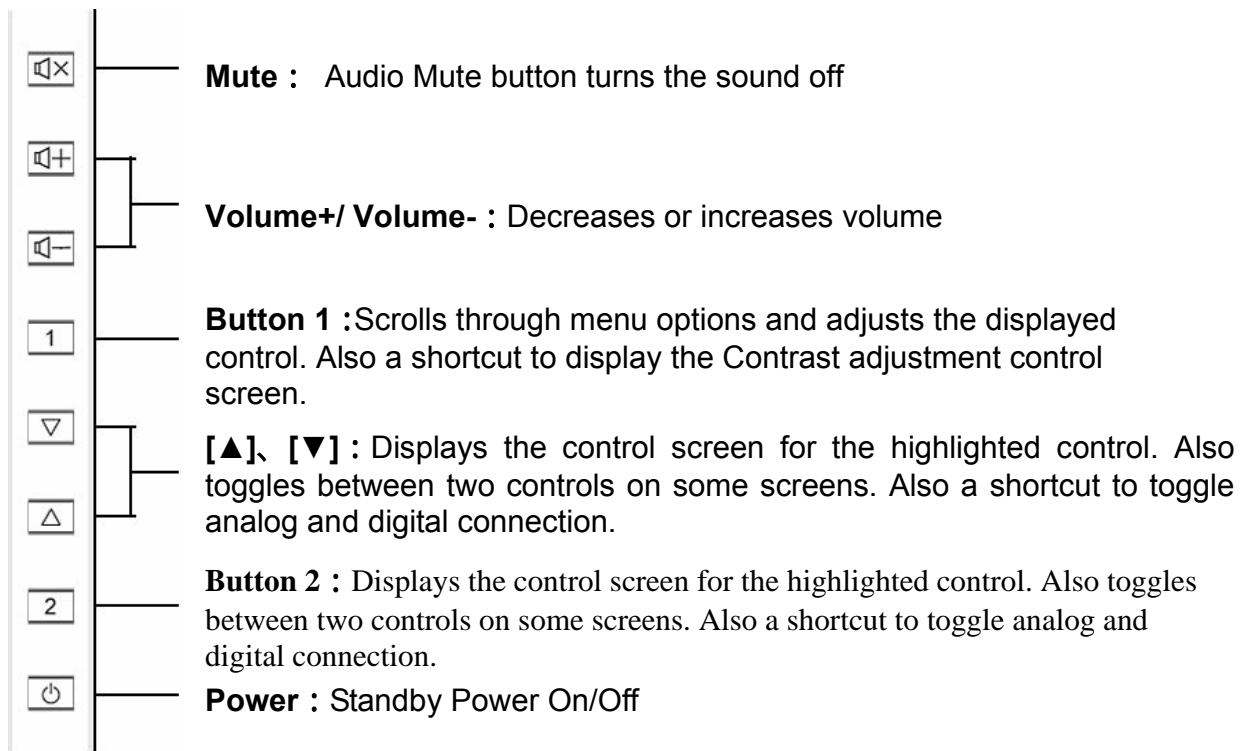
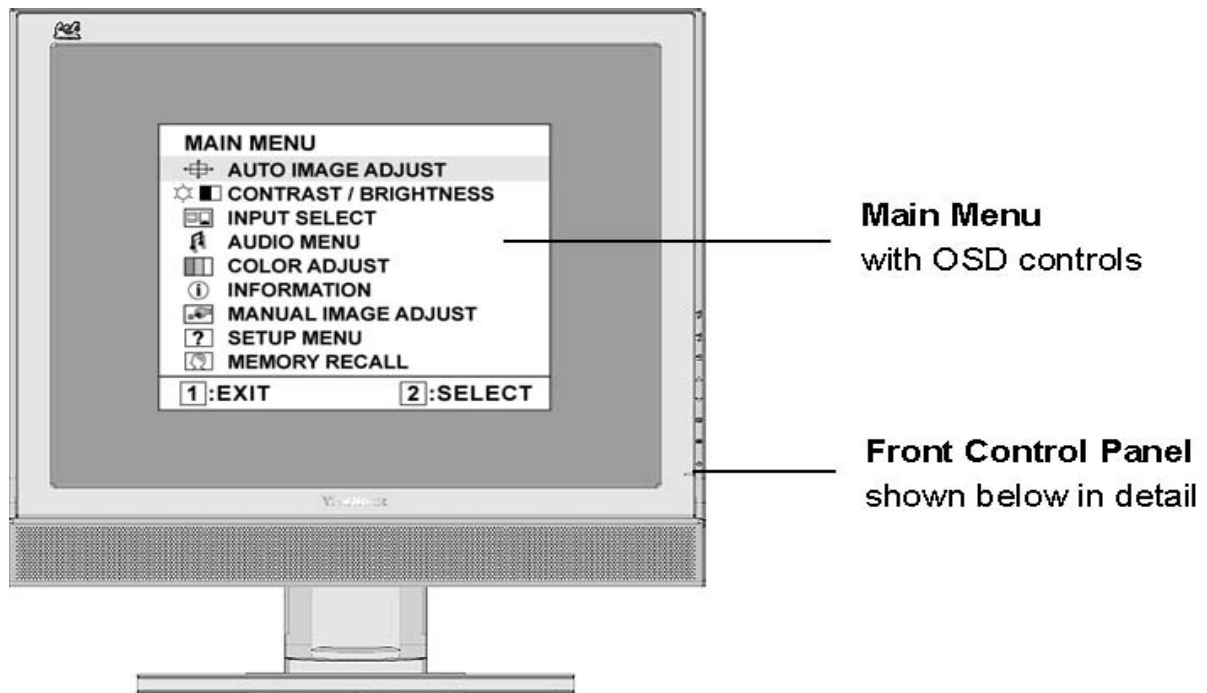


## DVI-D 24 PIN CONNECTOR



Pin No.	Signal Name	Description
1	RX2-	TMDS negative differential input, channel 2
2	RX2+	TMDS positive differential input, channel 2
3	GND	Logic Ground
4	Reserved 4	Reserved. No connection
5	Reserved 5	Reserved. No connection
6	DDC-CLK	DDC2B Clock
7	DDC-DAT	DDC2B Data
8	Reserved 8	Reserved. No connection
9	RX1-	TMDS negative differential input, channel 1
10	RX1+	TMDS positive differential input, channel 1
11	GND	Logic Ground
12	Reserved 12	Reserved. No connection
13	Reserved 13	Reserved. No connection
14	VCCX	Power
15	GND	Logic Ground
16	SENS	SENSE Pin, Pull High
17	RX0-	TMDS negative differential input, channel 0
18	RX0+	TMDS positive differential input, channel 0
19	GND	Logic Ground
20	Reserved 20	Reserved. No connection
21	Reserved 21	Reserved. No connection
22	GND	Logic Ground
23	RXC+	TMDS positive differential input, reference clock
24	RXC-	TMDS negative differential input, reference clock

### 3. Front Panel Function Controls And Indicators

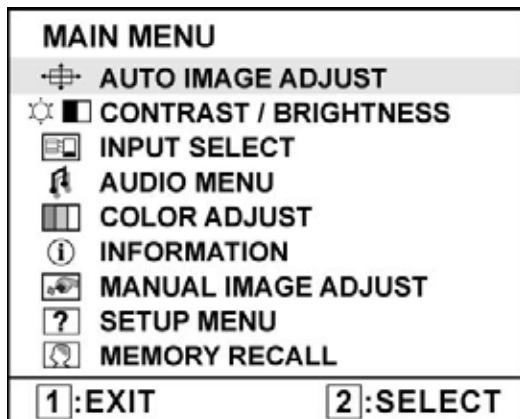


Power LED (Front Head)

Green – ON  
Orange – Active Off  
Dark = Soft Power Switch OFF

**Do the following to adjust the display setting:**

1. To display the Main Menu, press button [1].



**NOTE:** All OSD menus and adjustment screens disappear automatically after about 15 seconds. This is adjustable through the OSD timeout setting in the setup menu.

2. To select a control to adjust, press or ▼ to ▲ scroll up or down in the Main Menu.
3. After the desired control is selected, press button [2]. A control screen like the one shown below appears.



The command line at the bottom of the control screen tells what to do next from this screen. You can toggle between control screens, adjust the selected option, or exit the screen.





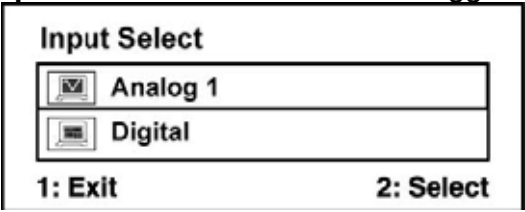


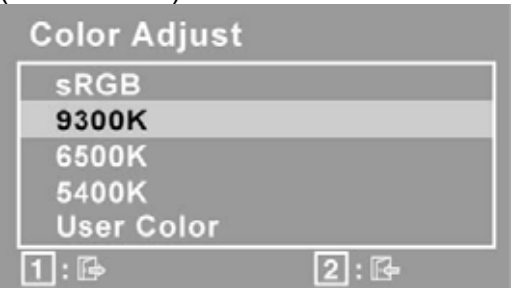
4. To adjust the setting, press the up ▼ or ▲ down T buttons.
5. To save the adjustments and exit the menu, press button [1] *twice*.

















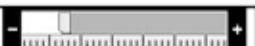
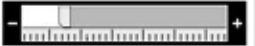
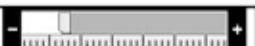
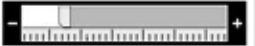
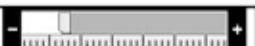
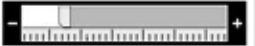


**The following tips may help you optimize your display:**


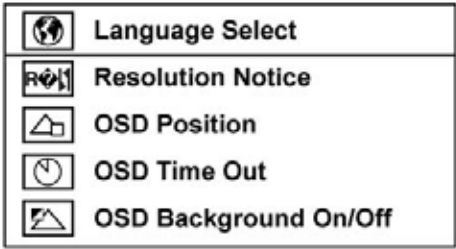


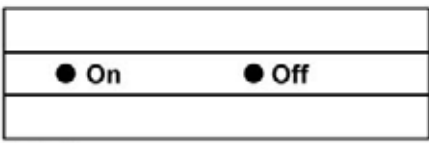





- Adjust the computer's graphics card so that it outputs a 1280 x 1024 @ 60Hz video signal to the LCD display. (Look for instructions on "changing the refresh rate" in the graphics card's user guide.)
- If necessary, make small adjustments using H. POSITION and V. POSITION until the screen image is completely visible. (The black border around the edge of the screen should barely touch the illuminated "active area" of the LCD display.)

## Main Menu Controls

Adjust the menu items shown below by using the up ▲ and down ▼ buttons.

Control	Explanation
	<b>Auto Image Adjust</b> sizes and centers the screen image automatically.
	<b>Contrast</b> adjusts the difference between the image background (black level) and the foreground (white level).
	<b>Brightness</b> adjusts background black level of the screen image.
	<p><b>Input Select</b> allows the user to toggle between an analog and a digital signal.</p> 
	<p><b>Audio Adjust</b>  <b>Volume</b> increases the volume, decreases the volume, and mutes the audio.  <b>Mute</b> temporarily silences audio output.</p>
	<p><b>Color Adjust</b> provides several color adjustment modes, including preset color temperatures and a User Color mode which allows independent adjustment of red (R), green (G), and blue (B). The factory setting for this product is 6500K (6500 Kelvin).</p>  <p><b>9300K</b>-Adds blue to the screen image for cooler white (used in most office settings with fluorescent lighting).  <b>6500K</b>-Adds red to the screen image for warmer white and richer red.  <b>5400K</b>-Adds green to the screen image for a darker color.  <b>User Color</b> Individual adjustments for red (R), green (G), and blue (B).  <b>1.</b> To select color (R, G or B) press button [2].  <b>2.</b> To adjust selected color, press ▼ and ▲.  <b>Important:</b> If you select RECALL from the Main Menu when the product is set to a Preset Timing Mode, colors return to the 6500K factory preset.</p>

	<p><b>Information</b> displays the timing mode (video signal input) coming from the graphics card in the computer, the LCD model number, the serial number, and the ViewSonic® website URL. See your graphics card's user guide for instructions on changing the resolution and refresh rate (vertical frequency). <b>NOTE:</b> VESA 1280 x 1024 @ 60Hz (recommended) means that the resolution is 1280 x 1024 and the refresh rate is 60 Hertz.</p> <div><p><b>Information</b></p><table><tr><td>H. Frequency:</td><td>XX</td><td>kHz</td></tr><tr><td>V. Frequency:</td><td>XX</td><td>Hz</td></tr><tr><td>Resolution:</td><td>XXX</td><td>MHz</td></tr><tr><td>Pixel Clock:</td><td colspan="2">XXXXXXXXXX</td></tr><tr><td colspan="3">Serial Number: XXXXXXXXXXXX</td></tr><tr><td colspan="3">Model Number: XXXXXXXXXXXX</td></tr><tr><td colspan="2">www.ViewSonic.com</td><td>1: Exit</td></tr></table></div>	H. Frequency:	XX	kHz	V. Frequency:	XX	Hz	Resolution:	XXX	MHz	Pixel Clock:	XXXXXXXXXX		Serial Number: XXXXXXXXXXXX			Model Number: XXXXXXXXXXXX			www.ViewSonic.com		1: Exit
H. Frequency:	XX	kHz																				
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www.ViewSonic.com		1: Exit																				
	<p><b>Manual Image Adjust Sub-menu</b></p> <div><p><b>Manual Image Adjust</b></p><table><tr><td></td><td>H. Size</td></tr><tr><td></td><td>H./V. Position</td></tr><tr><td></td><td>Fine Tune</td></tr><tr><td></td><td>Sharpness</td></tr></table><p>1: Exit                      2: Select</p></div>		H. Size		H./V. Position		Fine Tune		Sharpness													
	H. Size																					
	H./V. Position																					
	Fine Tune																					
	Sharpness																					
	<p><b>H. Size (Horizontal Size)</b> adjusts the width of the screen image.</p>																					
	<p><b>H./V. Position (Horizontal/Vertical Position)</b> moves the screen image left or right and up or down.</p> <div><p><b>H./V. Position</b></p><table><tr><td>H. Position</td><td></td></tr><tr><td>V. Position</td><td></td></tr><tr><td colspan="2">- : ↓                      + : ↑</td></tr></table><p>1: Exit                      2: Select</p></div>	H. Position		V. Position		- : ↓                      + : ↑																
H. Position																						
V. Position																						
- : ↓                      + : ↑																						
	<p><b>Fine Tune</b> sharpens the focus by aligning text and/or graphics with pixel boundaries. <b>NOTE:</b> Try Auto Image Adjust first.</p>																					
	<p><b>Sharpness</b> adjusts the clarity and focus of the screen image.</p>																					

	<p><b>Setup Menu</b> displays the menu shown below:</p> <div data-bbox="363 360 887 703">  </div>
	<p><b>Language Select</b> allows the user to choose the language used in the menus and control screens.</p>
	<p><b>Resolution Notice</b> allows the user to enable or disable this notice.</p> <div data-bbox="363 909 858 1133">  </div> <p>If you enable the Resolution Notice shown above and your computer is set at a resolution other than 1280 x 1024, the following screen appears.</p> <div data-bbox="363 1261 863 1435">  </div>
	<p><b>OSD Position</b> allows the user to move the OSD menus and control screens.</p>
	<p><b>OSD Timeout</b> sets the length of time the OSD screen is displayed. For example, with a “30 second” setting, if a control is not pushed within 30 seconds, the display screen disappears.</p>
	<p><b>OSD Background</b> allows the user to turn the OSD background On or Off.</p>
	<p><b>Memory Recall</b> returns the adjustments back to factory settings if the display is operating in a factory Preset Timing Mode listed in the Specifications of this manual.</p>

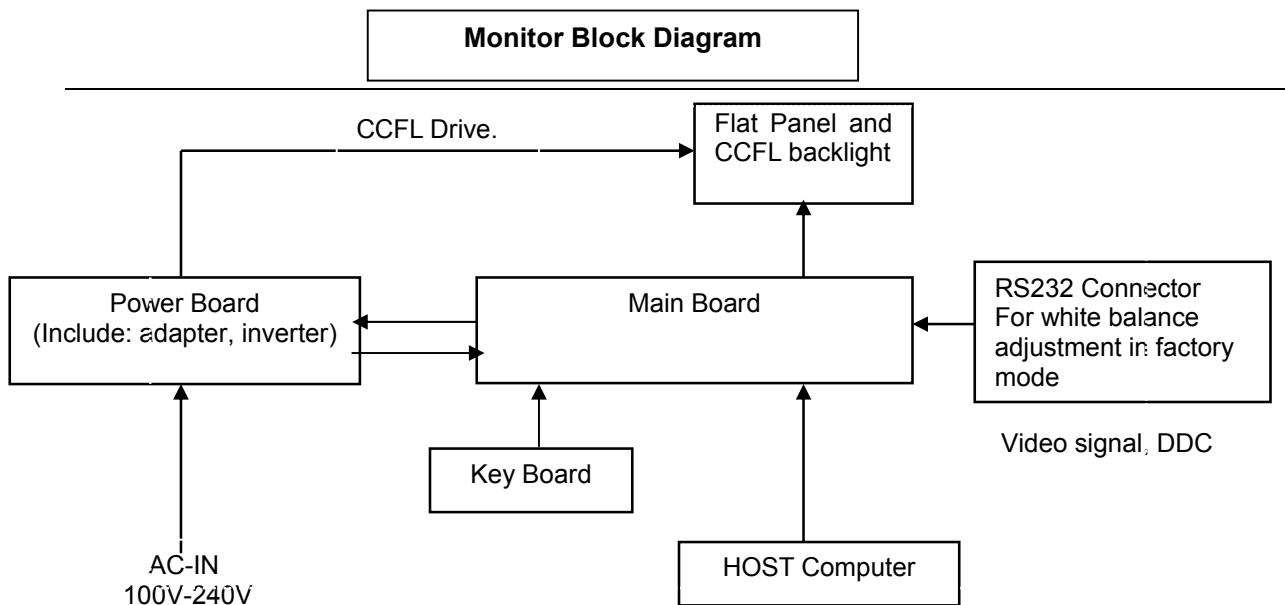
## SHORT CUTS FUNCTION FROM THE BUTTONS

[1]	Main Menu
[2]	Input toggle (Analog or Digital).
[▼] or [▲]	To immediately activate Contrast menu. It should be change to Brightness OSD by push button [2]
[▼] + [▲]	recall both of Contrast and Brightness to default
[⏮] or [⏭]	To immediately activate Volume menu for audio volume.
[⏮] + [⏭]	Recall volume to default
[1] + [2]	toggle 720x400 and 640x400 mode when input 720x400 or 640x400 mode
[1] + [⏮]	White Balance. (Not shown on user's guide)
[2] + [▼]	<ul style="list-style-type: none"> <li>• <b>Power Button Lock:</b> Press and hold "[2], &amp; ▼" for 10 seconds. If the power button is pressed the message <i>Power Button Locked</i> will display for 5 seconds. With or without this setting, after a power failure, your LCD display's power will automatically turn ON when power is restored.</li> <li>• <b>Power Button Unlock:</b> Press and hold "[2], &amp; ▼" again for 10 seconds.</li> </ul>
[1] + [▲]	<ul style="list-style-type: none"> <li>• <b>OSD Lock:</b> Press and hold "[1], &amp; (▲)" for 10 seconds. If any buttons are pressed the message <i>OSD Locked</i> will display for 5 seconds.</li> <li>• <b>OSD Unlock:</b> Press and hold "[1], &amp; ▲" again for 10 seconds.</li> </ul>
Remark : All the short cuts function are only available while OSD off	

## 4. Circuit Description

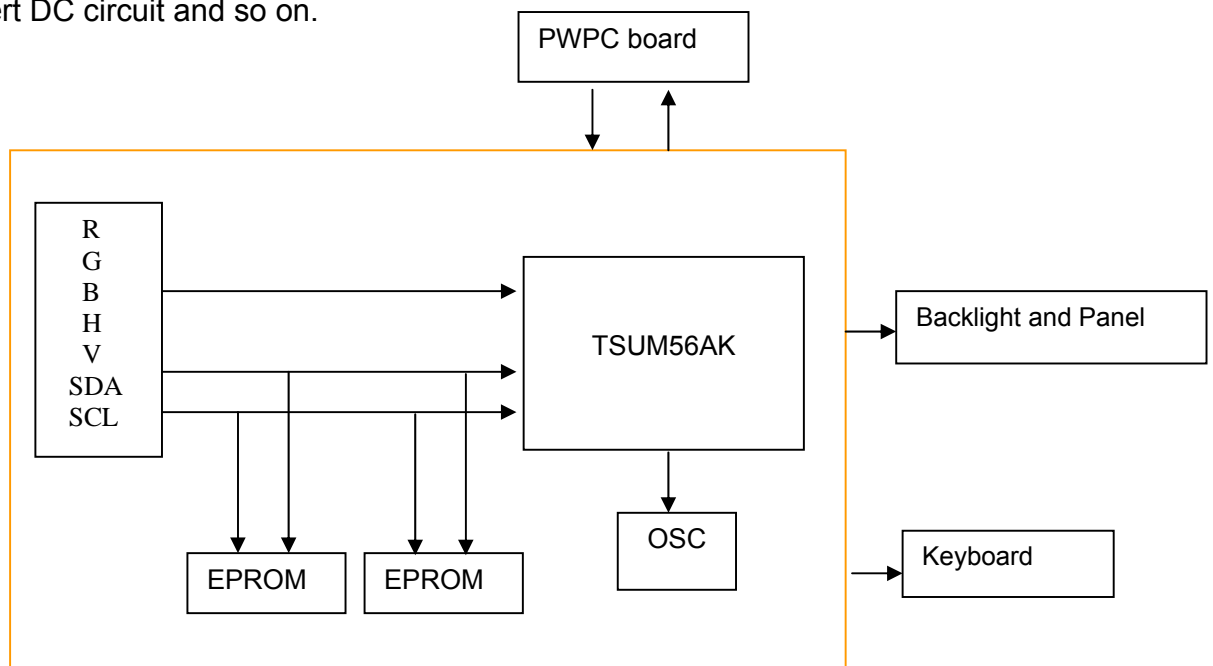
### 4.1 LCD MONITOR DESCRIPTION

The LCD MONITOR will contain a Main Board, an Power Board, Key Board which house the flat panel control logic, brightness control logic and DDC.



### 4.2 MAIN BOARD BLOCK FUNCTION DESCRIPTION

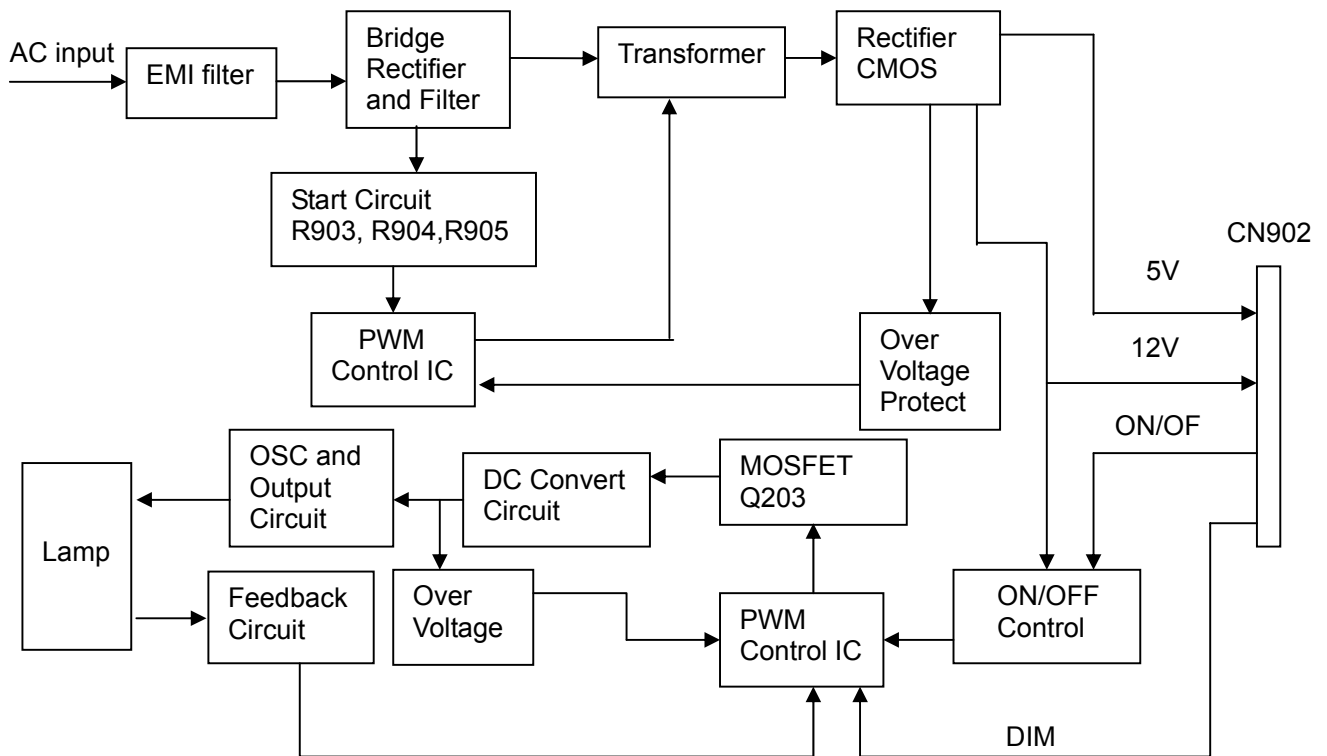
The main board contains panel control logic, brightness control logic, DDC and DC convert DC circuit and so on.





### 4.3 PWPC BOARD BLOCK FUNCTION DESCRIPTION

PWPC board combines to adapter and inverter, Adapter which commonly consists of bridge rectifier and filter, start circuit, PWM control circuit, protection circuits and convert to 12V, 5V DC voltage by input 90V-240V AC voltage that provide power supply for each chips in the main board and inverter. Inverter is DC TO AC circuit. It changes the 12v DC of power supply to about 600-800v AC that drives the backlight. It mostly consists of starting circuit, PWM controller, DC changing circuit, LC surging circuit, output circuit and protection circuit etc.



#### 4.4 INTRODUCTION OF IC

**STUM56AK(U401):** integrate ADC, OSD, SCALER, MCU, LVDS, convert analog RGB into digital and room and shrink scaling output to LCD panel.

##### PIN Function:

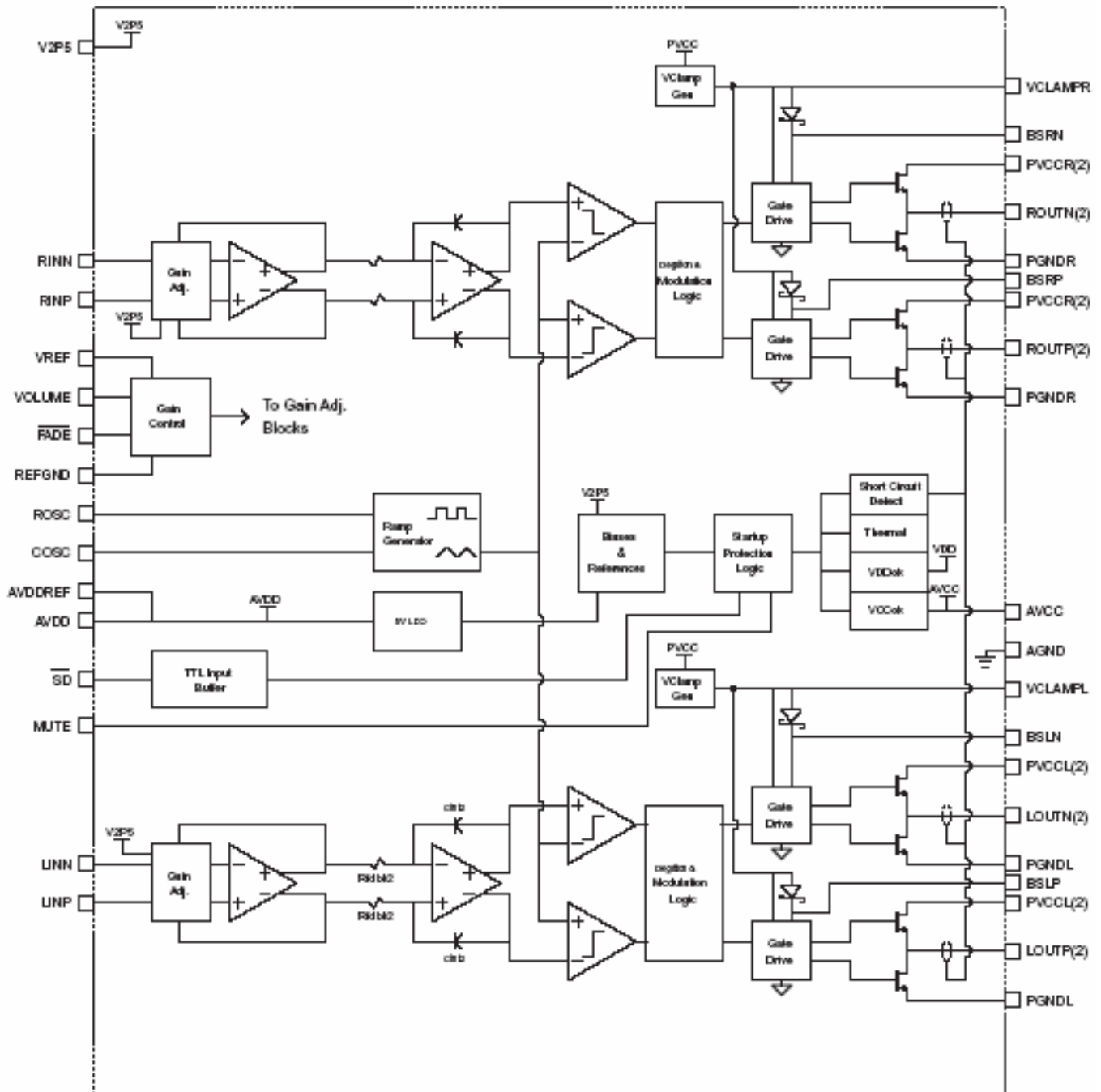
Pin	Symbol	Description
70	SDO	SPI flash serial data output; Input w/5V-tolerant
71	CSZ	SPI flash chip select; output
72	SCK	SPI flash serial select; output
73	SDI	SPI flash serial data input; output
65	DDCA_SDA/RS232_TX	DDC data for analog interface; 4mA driving strength/UART transmitter/GPIO; I/O w/5V-tolrant
66	DDCA_SDA/RS232_RX	DDC data for analog interface/UART transmitter/GPIO;Input w/5V-tolrant
36	DDCD_SDA	DDC data for DVI interface; 4mA driving strength; I/O w/5V-tolerant
37	DDCD_SCL	DDC clock for DVI interface; Input w/5V-tolerant
19	RST	Chip reset; High reset; Input w/5V-tolerant
22	RSTN	Chip reset; Low reset; Input w/5W-toerant
11	VCTRL	Regulator control; Output
63	HSYNCO	Analog HSYNC input
64	VSYNCO	Analog VSYNC input
62	REFP	Internal ADC top de-coupling pin
61	REFM	Internal ADC bottom de-coupling pin
51	REXT	External resistor 390 ohm to AVDD__DVI
21	PWM1	PWM1; 4mA driving strength; Output
29	PWM0	PWM0; 4mA driving strength; Output
4	BYPASS	For External Bypass Capacitor
33	XIN	Xin; Crystal Oscillator Input
34	XOUT	Xout; Crystal Oscillator Output
44、 50	AVDD__DVI	DVI Power 3.3V
60	AVDD__ADC	ADC Power 3.3V
52	AVDD__PLL	PLL Power 3.3V
34	AVDD__MPLL	MPLL Power 3.3V
14、 67、 95、 103、 115	VDDP	Digital Output Power 3.3V
13、 38、 41、 47、 96、 116	VDDC	Digital Core Power <b>1.8V</b>

**AIC1084-33PM (U702):** DC power convert, used to 5v convert 3.3v.

**LT1117-18(U701):** DC power convert, used to 5v convert 3.3v.

**TPA3003D2 (U601):** The TPA3003D2 is a audio amplifier IC,3-W efficient, driving speakers as low as 8  $\Omega$ , range of gain from -40dB to 36 dB. The function of each pin and the inside circuit diagram are as follows:

### Circuit Diagram

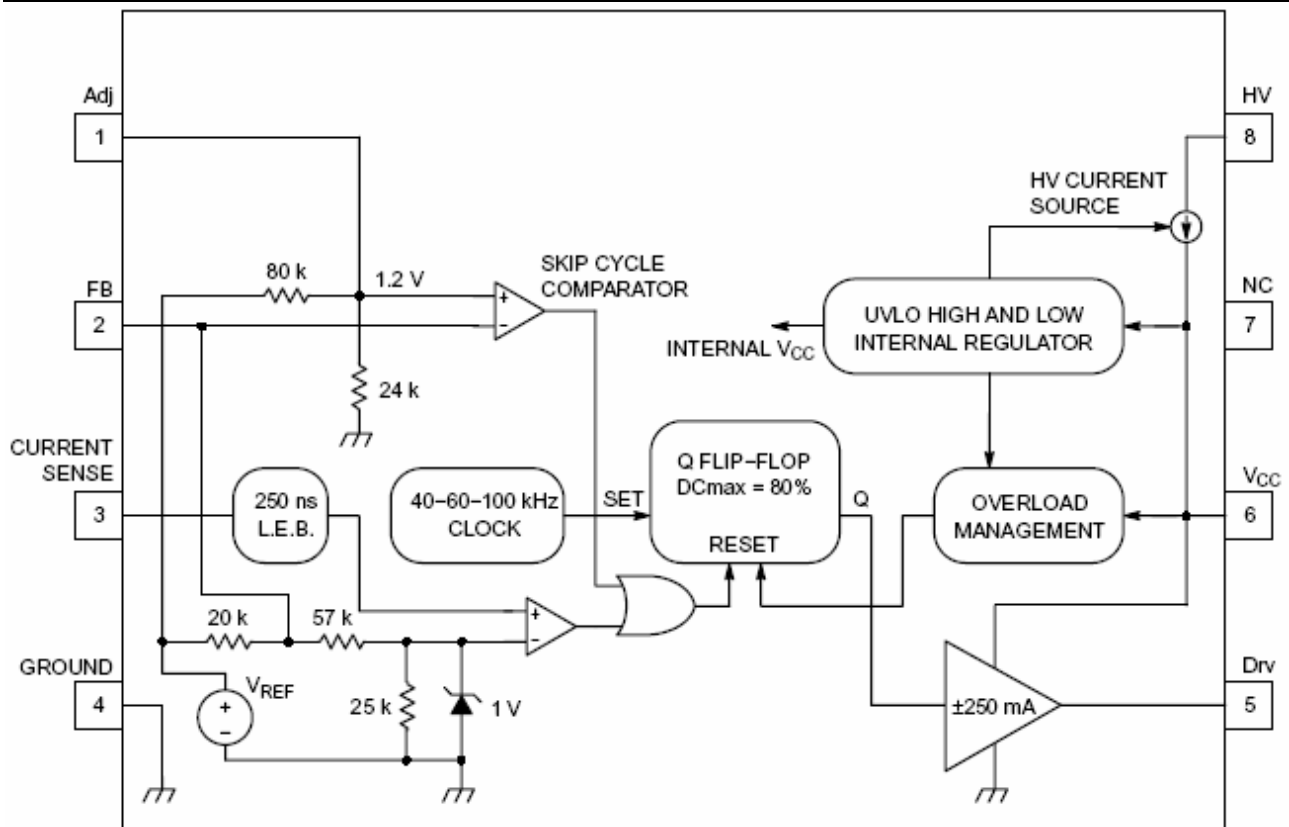


## PIN Function

TERMINAL NO.	NAME	I/O	DESCRIPTION
AGND	9,10,26	-	Analog ground for digital/analog cells in core
AVcc	33	-	High-voltage analog power supply (8.5V to 14V)
AVDD	29	O	5-V Regulated output
AVDDREF	7	O	5-V Reference output-provided for connection to adjacent VREF terminal.
BSLN	13	I/O	Bootstrap I/O for left channel, negative high-side FET
BSLP	24	I/O	Bootstrap I/O for left channel, positive high-side FET
BSRN	48	I/O	Bootstrap I/O for right channel, negative high-side FET
BSRP	37	I/O	Bootstrap I/O for right channel, positive high-side FET
COSC	28	I/O	I/O for charge/discharging currents onto capacitor for ramp generator triangle wave biased at V2P5
FADE	30	I	Input for controlling volume ramp rate when cycling <b>SD</b> or during power-up. A logic low on this pin places the amplifier in fade mode. A logic high on this pin allows a quick transition to the desired volume setting.
LINN	6	I	Negative differential audio input for left channel
LINP	5	I	Positive differential audio input for left channel
LOUTN	16,17	O	Class-D 1/2-H-bridge negative output for left channel
LOUTP	20,21	O	Class-D 1/2-H-bridge positive output for left channel
MUTE	34	I	A logic high on this pin disables the outputs. A low on this pin enables the outputs.
NC	31,32,35	-	Not internally connected
PGNDL	18,19	-	Power ground for left channel H-bridge
PGNDR	42,43	-	Power ground for right channel H-bridge
PVCCCL	14,15	-	Power supply for left channel H-bridge(tied to pins 22 and 23 internally), not connected to PVCCR or AVcc
PVCCCL	22,23	-	Power supply for left channel H-bridge(tied to pins 14 and 15 internally), not connected to PVCCR or AVcc
PVCCR	38,39	-	Power supply for right channel H-bridge(tied to pins 46 and 47 internally), not connected to PVCCCL or AVcc
PVCCR	46,47	-	Power supply for right channel H-bridge(tied to pins 38 and 39 internally), not connected to PVCCCL or AVcc
REFGND	12	-	Ground for gain control circuitry. Connect to AGND. If using a DAC to control the volume, connect the DAC ground to this terminal.
RINP	3	I	Positive differential audio input for right channel
RINN	2	I	Negative differential audio input for right channel
ROSC	27	I/O	Current setting resistor for ramp generator. Nominally equal to $1/8 \cdot V_{cc}$
ROUTN	44,45	O	Class-D 1/2-H-bridge negative output for right channel
ROUTP	40,41	O	Class-D 1/2-H-bridge positive output for right channel
SD	1	I	Shutdown signal for IC (low=shutdown, high=operational). TTL logic levels with compliance to Vcc.
VCLAMPL	25	-	Internally generated voltage supply for left channel bootstrap capacitors.
VCLAMPR	36	-	Internally generated voltage supply for right channel bootstrap capacitors.
VOLUME	11	I	DC voltage that sets the gain of the amplifier.
VREF	8	I	Analog reference for gain control section.
V2P5	4	O	2.5-V Reference for analog cells, as well as reference for unused audio input when using single-ended inputs.

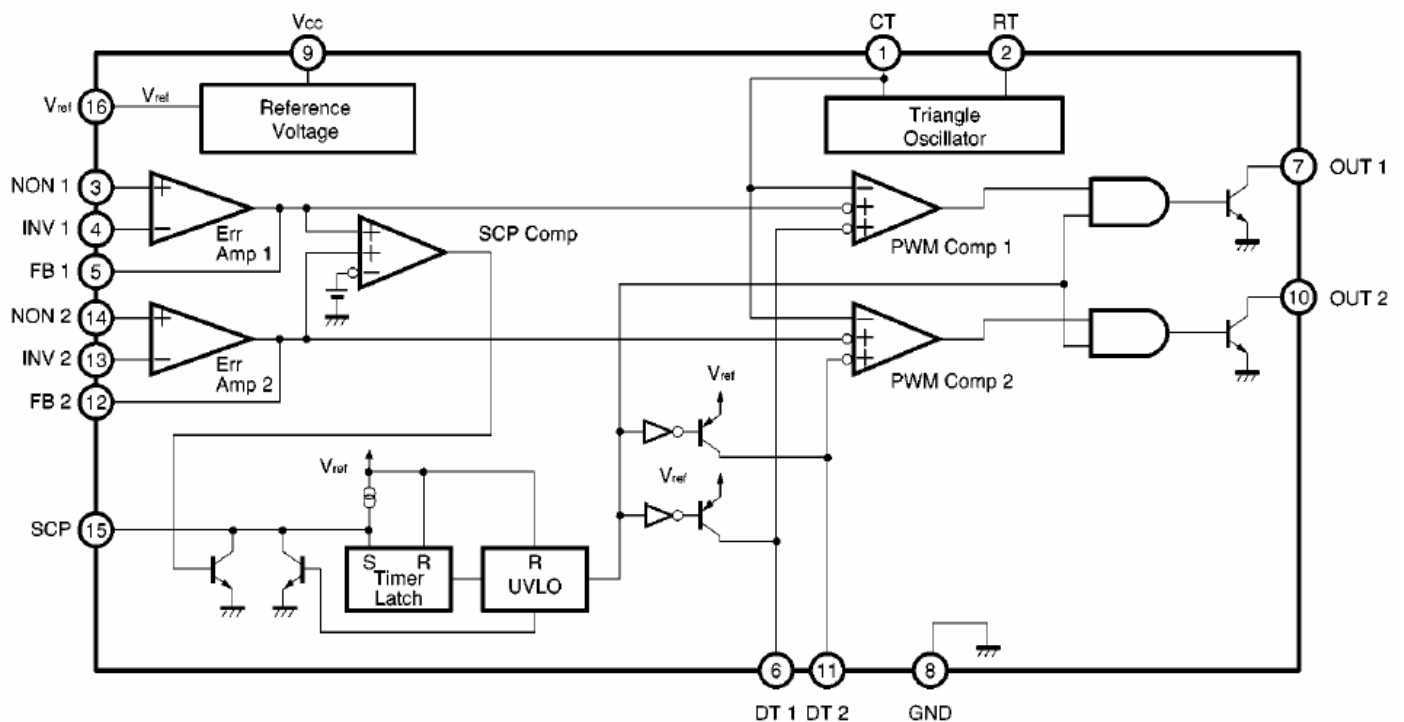
**NCP1203D60R2G (IC901):** PWM control, high-voltage startup current. The circuit unit has functions such as over-current protection, over-voltage protection, output short-circuit protection and etc. The function of each pin and the inside circuit diagram are as follows:

Pin No.	Pin Name	Function	Pin Description
1	Adj	Adjust the skipping peak current	This pin lets you adjust the level at which the cycle skipping process takes place. Shorting this pin to ground, permanently disables the skip cycle feature.
2	FB	Sets the peak current setpoint	By connecting an optocoupler to this pin, the peak current setpoint is adjusted accordingly to the output power demand. Skip cycle occurs when FB falls below $V_{pin1}$ .
3	CS	Current sense input	This pin senses the primary current and routes it to the internal comparator via an L.E.B.
4	GND	The IC ground	–
5	Drv	Driving pulses	The driver's output to an external MOSFET.
6	VCC	Supplies the IC	This pin is connected to an external bulk capacitor of typically 22 $\mu$ F.
7	NC	–	This unconnected pin ensures adequate creepage distance.
8	HV	Ensure a clean and lossless startup sequence	Connected to the high-voltage rail, this pin injects a constant current into the VCC capacitor during the startup sequence.



**TL1451 (IC201):** PWM control, voltage range for working: 3.6~35V, Has such functions as short-voltage protection, Over-voltage protection, over-current protection and etc. The function of each pin and the circuit diagram inside are as follows:

Pin	Symbol	Description	Pin	Symbol	Description
1	CT	External timing capacitor	9	VCC	Power supply
2	RT	External timing resistor	10	2OUT	Output 2
3	1IN+	Positive input for error amplifier 1	11	2DTC	Output 2 dead time/soft start setting
4	1IN-	Positive input for error amplifier 2	12	2FBK	Error amplifier 2 output
5	1FBK	Error amplifier 1 output	13	2IN+	Positive input for error amplifier
6	1DTC	Output 1 dead time/soft start setting	14	2IN-	Positive input for error amplifier
7	1OUT	Output 1	15	SCP	Timing latch setting
8	GND	Ground	16	REF	Reference voltage output (2.5v)



## 5. Adjust Procedure

### 5.1 ADJUSTMENT CONDITIONS AND PRECAUTIONS

1. Approximately 30 minutes should be allowed for warm up before proceeding.
2. Adjustments should be undertaken only on those necessary elements since most of them have been carefully preset at the factory.
3. ESD protection is needed before adjustment.

### 5.2 MAIN ADJUSTMENTS

NO.	FUNCTIONS	DESIGNATION
1.	White Balance	Function Key
2.	Geometry	Function Key

### 5.3 ALIGNMENT PROCEDURES

**Approximately 30 minutes should be allowed for warm up before proceeding White-Balance adjustment.**

#### 1. Adjust of White Balance

1.)How to do the Chroma-7120 MEM .Channel setting

- A、 Reference to chroma 7120 user guide
- B、 Use “**SC**” key and “**NEXT**” key to modify xyY value and use “**ID**” key to modify the TEXT description Following is the procedure to do white-balance adjust

2.)Setting the color temp. You want

- A、 MEM.CHANNEL9 ( 9300 color):  
9300 color temp. parameter is  $W_x = 0.283 \pm 0.03$ ;  $W_y = 0.298 \pm 0.03$ ;  
 $Y = 250 \pm 20 \text{ cd/m}^2$ ,
- B、 MEM.CHANNEL10 ( 6500 color):  
6500 color temp. parameter is  $W_x = 0.313 \pm 0.03$ ;  $W_y = 0.329 \pm 0.03$ ;  
 $Y = 260 \pm 20 \text{ cd/m}^2$ ,
- C、 MEM.CHANNEL 11 ( 5400 color):  
5400 color temp. parameter is  $W_x = 0.335 \pm 0.03$ ;  $W_y = 0.350 \pm 0.03$ ;  
 $Y = 250 \pm 20 \text{ cd/m}^2$ ,
- D、 MEM.CHANNEL10 ( SRGB color):  
6500 color temp. parameter is  $W_x = 0.313 \pm 0.03$ ;  $W_y = 0.329 \pm 0.03$ ;  
 $Y = 220 \pm 20 \text{ cd/m}^2$ ,

### 3.)Into factory mode of VG720

- A、 First Power off, then press Switch 2 button along with press Power button will activate the factory mode, then MCU will do AUTO LEVEL automatically. Meanwhile press MENU the OSD screen will located at **LEFT TOP OF PANEL**.

### 4.)Bias adjustment :

Set the **Contrast**  to 70

Adjust the **Brightness**  to 100.

### 5.)Gain adjustment :

Move cursor to “-F-” and press MENU key

#### A、 Adjust 9300 color-temperature

- (1)、 Switch the Chroma-7120 to **RGB-Mode** (with press “MODE” button )
- (2)、 Switch the MEM. channel to Channel 9 ( with up or down arrow on chroma 7120 )
- (3)、 The LCD-indicator on chroma 7120 will show  $x = 0.283 \pm 0.03$ ,  $y = 0.298 \pm 0.03$ ,  $Y = 250 \pm 20 \text{ cd/m}^2$
- (4)、 Adjust the RED of color1 on factory window until chroma 7120 indicator reached the value  $R=100$
- (5)、 Adjust the GREEN of color1 on factory window until chroma 7120 indicator reached the value  $G=100$
- (6)、 Adjust the BLUE of color1 on factory window until chroma 7120 indicator reached the value  $B=100$
- (7)、 Repeat above procedure ( item 4,5,6) until chroma 7120 RGB value meet the tolerance  $=100 \pm 5$

#### B、 Adjust 6500 color-temperature

- (1)、 Switch the chroma-7120 to **RGB-Mode** (with press “MODE” button )
- (2)、 Switch the MEM .channel to Channel 10( with up or down arrow on chroma 7120 )
- (3)、 The LCD-indicator on chroma 7120 will show  $x = 0.313 \pm 0.03$ ,  $y = 0.329 \pm 0.03$ ,  $Y = 260 \pm 20 \text{ cd/m}^2$
- (4)、 Adjust the RED of color3 on factory window until chroma 7120 indicator reached the value  $R=100$
- (5)、 Adjust the GREEN of color3 on factory window until chroma 7120 indicator reached the value  $G=100$
- (6)、 Adjust the BLUE of color3 on factory window until chroma 7120 indicator reached the value  $B=100$
- (7)、 Repeat above procedure ( item 4,5,6) until chroma 7120 RGB value meet the tolerance  $=100 \pm 5$



### C、 Adjust 5400 color-temperature

- (1) Switch the chroma-7120 to **RGB-Mode** (with press “MODE” button )
- (2)、 Switch the MEM .channel to Channel 11( with up or down arrow on chroma 7120 )
- (3)、 The LCD-indicator on chroma 7120 will show  $x = 0.335 \pm 0.03$ ,  $y = 0.350 \pm 0.03$ ,  $Y = 250 \pm 20 \text{ cd/m}^2$
- (4)、 Adjust the RED of color3 on factory window until chroma 7120 indicator reached the value  $R=100$
- (5)、 Adjust the GREEN of color3 on factory window until chroma 7120 indicator reached the value  $G=100$
- (6)、 Adjust the BLUE of color3 on factory window until chroma 7120 indicator reached the value  $B=100$
- (7)、 Repeat above procedure ( item 4,5,6) until chroma 7120 RGB value meet the tolerance  $=100 \pm 5$

### D、 Adjust SRGB color-temperature

- (1)、 Switch the chroma-7120 to **RGB-Mode** (with press “MODE” button )
- (2)、 Switch the MEM .channel to Channel 10( with up or down arrow on chroma 7120 )
- (3)、 The LCD-indicator on chroma 7120 will show  $x = 0.313 \pm 0.03$ ,  $y = 0.329 \pm 0.03$ ,  $Y = 220 \pm 20 \text{ cd/m}^2$
- (4)、 Adjust the RED of color3 on factory window until chroma 7120 indicator reached the value  $R=100$
- (5)、 Adjust the GREEN of color3 on factory window until chroma 7120 indicator reached the value  $G=100$
- (6)、 Adjust the BLUE of color3 on factory window until chroma 7120 indicator reached the value  $B=100$
- (7)、 Repeat above procedure ( item 4,5,6) until chroma 7120 RGB value meet the tolerance  $=100 \pm 5$

E、 Press reset key and Turn the Power-button “off to on” to quit from factory mode.

## 2. Geometry

- 1).Set cross-hatch pattern and preset timing as timing table listed.
- 2).Change to each mode in turn and wait for the monitor finish auto-alignment and save press before change to next mode.
- 3).Until all of modes are adjusted,exit OSD menu and press POWER OFF to exit factory mode.

## 5.4 Factory Defaults

Item	Defaults	Item	Defaults
Contrast	70%	Sharpness	33%
Brightness	100%	OSD H. Position	50%
Volume	50%	OSD V. Position	50%
Balance	50%	OSD Time Out	15 Sec
Bass	50%	OSD Background	On
Treble	50%	OSD PIVOT	Off
Color Temperature	6500K	Resolution Notice	Enabled
		720x400/640x400	720x400

## 5.5 Function Test

- 1 Product: 17" LCD Monitor
- 2 Test Equipment: Color Video Signal & Pattern (or PC with SXGA resolution and a sound card)
- 3 Test Condition: Before function test and alignment, each LCD Monitor should be warmed up for at least 30 minutes with the following conditions:
  - (a) In room temperature,
  - (b) With full-white screen, RGB, and Black
  - (c) With cycled display modes,
    - 640\*480 (H=43.27kHz, V=85Hz)
    - 800\*600 (H=53.7kHz, V=85Hz)
    - 1024\*768 (H=68.67kHz, V=85Hz)
    - 1280\*1024 (H=79.97kHz, V=75Hz)
- 4 Test Display Modes & Pattern

### Compatible Modes

Analog	Digital
640 x 350 @ 70Hz, 31.5kHz	640 x 350 @ 70Hz, 31.5kHz
640 x 400 @ 70Hz, 31.5kHz	640 x 400 @ 70Hz, 31.5kHz
640 x 480 @ 60Hz, 31.5kHz	640 x 480 @ 60Hz, 31.5kHz
640 x 480 @ 67Hz, 35.0kHz	640 x 480 @ 67Hz, 35.0kHz
640 x 480 @ 72Hz, 37.9kHz	640 x 480 @ 72Hz, 37.9kHz
640 x 480 @ 75Hz, 37.5kHz	640 x 480 @ 75Hz, 37.5kHz
720 x 400 @ 70Hz, 31.5kHz	720 x 400 @ 70Hz, 31.5kHz
800 x 600 @ 56Hz, 35.1kHz	800 x 600 @ 56Hz, 35.1kHz
800 x 600 @ 60Hz, 37.9kHz	800 x 600 @ 60Hz, 37.9kHz
800 x 600 @ 75Hz, 46.9kHz	800 x 600 @ 75Hz, 46.9kHz
800 x 600 @ 72Hz, 48.1kHz	800 x 600 @ 72Hz, 48.1kHz
832 x 624 @ 75Hz, 49.7kHz	832 x 624 @ 75Hz, 49.7kHz
1024 x 768 @ 60Hz, 48.4kHz	1024 x 768 @ 60Hz, 48.4kHz

1024 x 768 @ 70Hz, 56.5kHz	1024 x 768 @ 70Hz, 56.5kHz
1024 x 768 @ 72Hz, 58.1kHz	1024 x 768 @ 72Hz, 58.1kHz
1024 x 768 @ 75Hz, 60.0kHz	1024 x 768 @ 75Hz, 60.0kHz
1280 x 1024 @ 60Hz, 63.4kHz	1280 x 1024 @ 60Hz, 63.4kHz
1280 x 1024 @ 75Hz, 79.97kHz	1280 x 1024 @ 75Hz, 79.97kHz
1280x 720 @ 60Hz, 45kHz	1280x 720 @ 60Hz, 45kHz

### Function Test Display Pattern

Item	Test Content	Pattern	Specification	Remark
1	Frequency & Tracking	Fine Line Moire	Eliminate visual wavy noise.	Figure 1
2	Contrast/Brightness	16 Gray Scale	16 gray levels sh should be distinguishable.	Figure 2
3	Boundary	Horizontal&Vertical Thickness	Horizontal and Vertical position of video should be adjustable to be within the screen frame.	Figure 3
4	RGB Color Performance	RGB Color Intensities	Contrast of each R, G, B, color should be normal.	Figure 4,5,6
5	Screen Uniformity & Flicker	Full White	Should be compliant with the spec.	Figure 7
6	Dead Pixel/Line	White Screen & Dark Screen	The numbers of dead pixels should be compliant with the spec.	Figure 7,8
7	White Balance	White & Black Pattern	The screen must have the pure white and black pattern, no other color.	Figure 9



Fine Line Moire Pattern (Figure1)



Gray Scale Pattern (Figure2)



Horizontal & Vertical Thickness Pattern  
(Figure 3)



R. Color Pattern (Figure 4)



G. Color Pattern (Figure 5)



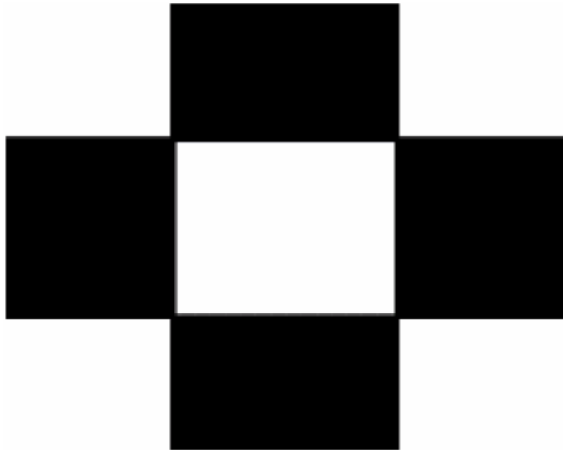
B. Color Pattern (Figure 6)



Full White Pattern (Figure 7)



Dark Screen Pattern (Figure 8)



Black-White Pattern (Figure 9)

### 4.3 Function Test and Alignment Procedure

#### **All Modes Reset**

You should do “All Mode Reset” (Refer to Chapter III-3. Hot Keys for Function Controls) first. This action will allow you to erase all end-user’s settings and restore the factory defaults.

#### **Auto Image Adjust**

Please select and enter “Auto Image Adjust” function on Main Menu to see if it is workable. The “Auto Image Adjust” function is aimed to offer a better screen quality by built-in ASIC. For optimum screen quality, the user has to adjust each function manually.

#### **Firmware**

Test Pattern: Burn In Mode (Refer to Chapter III-3. Hot Keys for Function Controls)

- Make sure the F/W is the latest version.

#### **DDC**

Test Pattern: EDID program

Make sure it can pass test program.

#### **Fine Tune and Sharpness**

Test Signal: 1280\*1024@60Hz

Test Pattern: Line Moire Pattern

Check and see if the image has noise and focus performs well. Eliminate visual line bar.

If not, readjust by the following steps:

- (a) Select and enter “Fine Tune” function on “Manual Image Adjust” to adjust the image to eliminate visual wavy noise.
- (b) Then, select and enter “Sharpness” function to adjust the clarity and focus of the screen image.

#### **Boundary**

Test Signal: 1280\*1024@60Hz

Test Pattern: Horizontal & Vertical Line Thickness Pattern

Check and see if the image boundary is within the screen frame.

If not, readjust by the following steps:

- (a) Select and enter “Manual Image Adjust” function on OSD Main Menu.

(b)Then, select and enter “Horizontal Size” or “Horizontal/Vertical Position” function to adjust the video boundary to be full scanned and within screen frame.

#### **White Balance**

Test Signal: 640\*480@60Hz

Test Pattern: White and Black Pattern

1.5.8 R, G, B, Colors Contrast

Test Signal: 1280\*1024@60Hz

Test Pattern: R, G, B, Color Intensities Pattern and 16 Gray Scale Pattern

- Check and see if each color is normal and distinguishable.
- If not, please return the unit to repair area.

#### **Screen Uniformity and Flicker**

Test Signal: 1280\*1024@60Hz

Test Pattern: Full White Pattern

- Check and see if it is in normal condition.

1.5.10 Dead Pixel and Line

Test Signal: 1280\*1024@60Hz

Test Pattern: Dark and White Screen Pattern

- Check and see if there are dead pixels on LCD panel with shadow gauge and filter film.
- The total numbers and distance of dead pixels should be compliant with the spec.

#### **Mura**

Test Pattern: White, RGB, Black, & Grey

Test Tool: 10% ND Filter

- Check if the Mura can pass 10% ND Filter.

#### **Audio**

Test Signal: Voice signal (optional, depend on model)

Test Pattern: liberty

- Make sure there is audio output.
- Make sure that audio function (volume 80%) is working without noise and resonance.
- Make sure that the sound of right and left speakers are in balance.

#### **Check for Secondary Display Modes**

Test Signal:

Analog: 640\*350@70Hz; 640\*480@60/67/72/75/85Hz;

720\*400@70Hz; 800\*600@56/60/72/75/85Hz;

832\*624@75Hz, 1024\*768@60/70/72/75/85Hz;

1280\*1024@60/75Hz

Digital: 640\*350@70Hz; 640\*480@60/72/75/85Hz;

720\*400@70Hz; 800\*600@56/60/72/75/85Hz;

1024\*768@60/70/72/75/85Hz; 1152\*870@75Hz,

1280\*720@60Hz, 1280\*1024@60Hz

- Normally when the primary mode 1280\*1024@60Hz is well adjusted and compliant with the specification, the secondary display modes will also be compliant with the spec. But we still have to check with the general test pattern to make sure every secondary is compliant with the specification.

-

### All Modes Reset

After final QC step, we have to erase all saved changes again and restore the factory defaults. You should do "All Mode Reset" again.

### Power Off Monitor

Turn off the monitor by pressing "Power" button.

## 5.6 Firmware Upgrade Procedure

When you receive the returned monitor, please check whether the firmware version is the latest. If not, please do the following procedures to upgrade it to the latest version.

### 1 Equipment Needed

- VG720/VG920 Monitor
- Fixture for Firmware Upgrade
- Power Adapter (P/N: 47.58201.001) \*1 for Fixture
- VGA Cable (P/N: 42.59901.003) \*1(Pin 4, 11 should be connected to GND)
- PC (Personal Computer)
- LPT Cable (P/N: 42.59906.001) \*1
- Firmware Upgrade Program
- One additional monitor for checking the program execution



Printer Port

PC



Fixture



VG720/VG920



Power Adapter for Fixture  
(P/N: 47.58201.001)



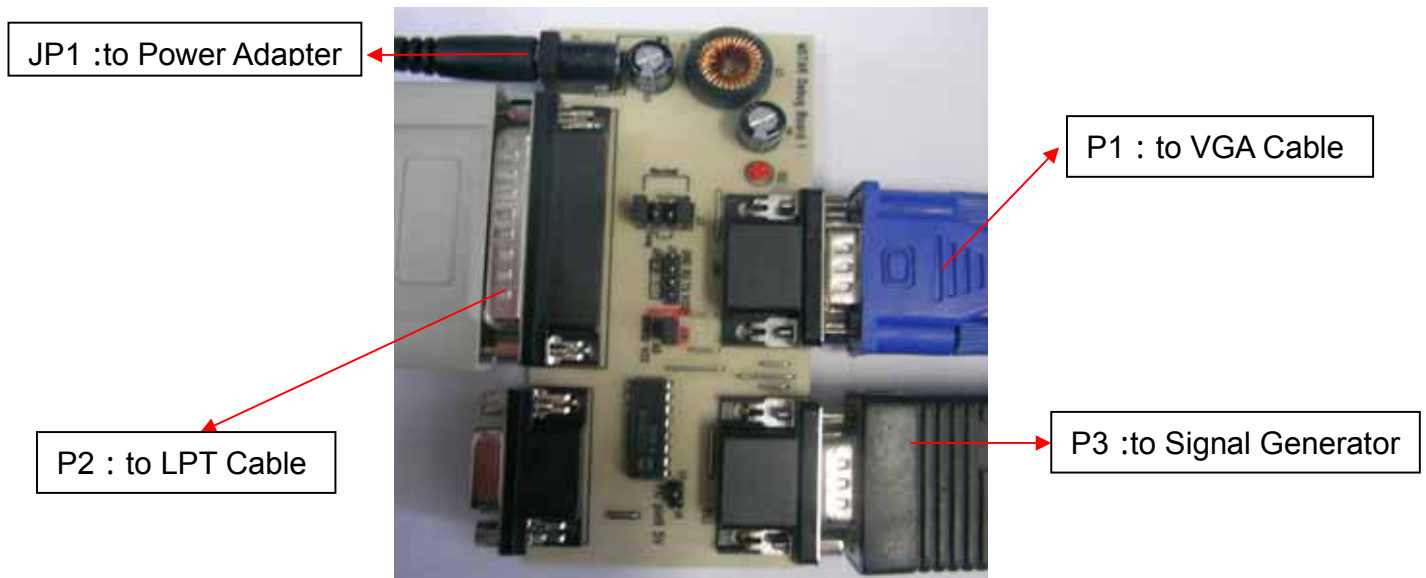
LPT Cable  
(P/N: 42.59906.001)



VGA Cable  
(P/N: 42.59901.003)

## 2 Setup Procedure

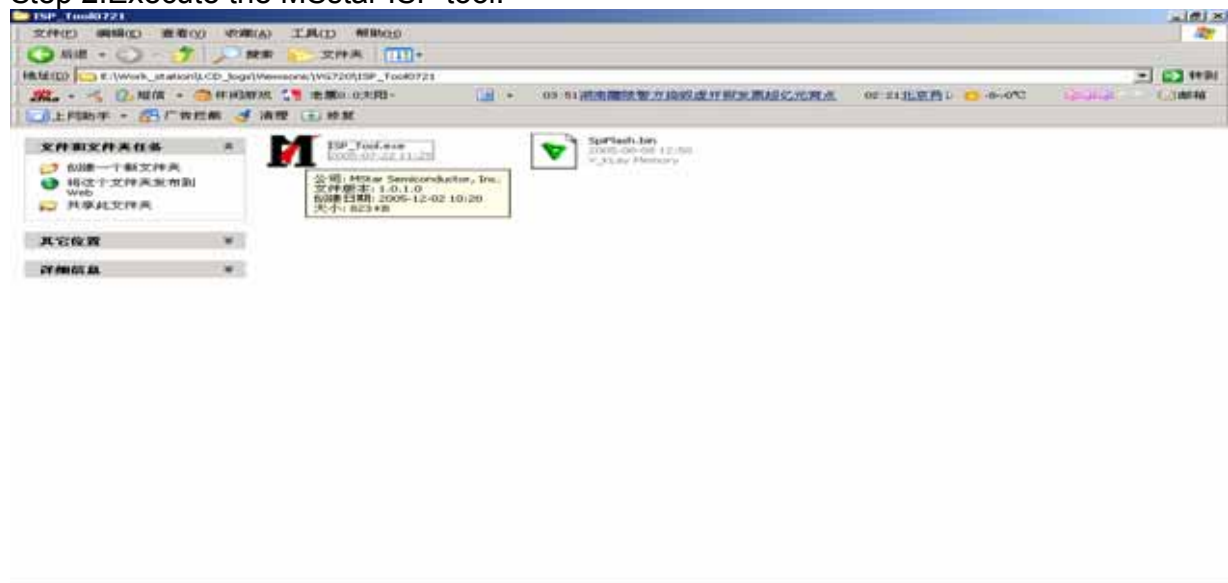
- 2.1 Connect P2 of Fixture with printer port of PC by LPT Cable.
- 2.2 Connect P1 of Fixture with VG720/VG920 Monitor by VGA Cable.
- 2.3 Plug Power Adapter to Fixture.
- 2.4 Connect Power Cord to VG720/VG920 Monitor.
- 2.5 Connect P3 to the Signal Generator (eg.Chroma2326) for verifying it after the operation being completed.
- 2.6 Connect PC to the additional monitor.



## 3 Firmware Upgrade Procedure

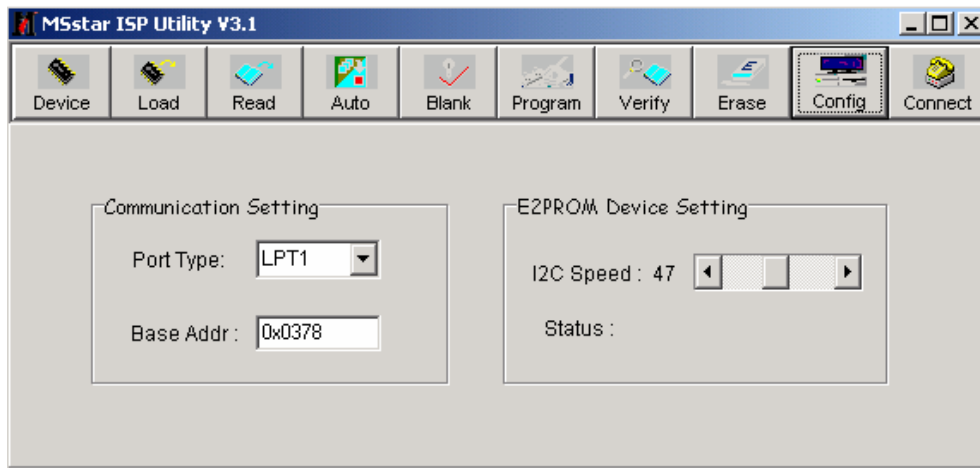
Step 1. Let VG720/VG920 set to be connected with AC cable and VGA cable.

Step 2. Execute the MSstar ISP tool.

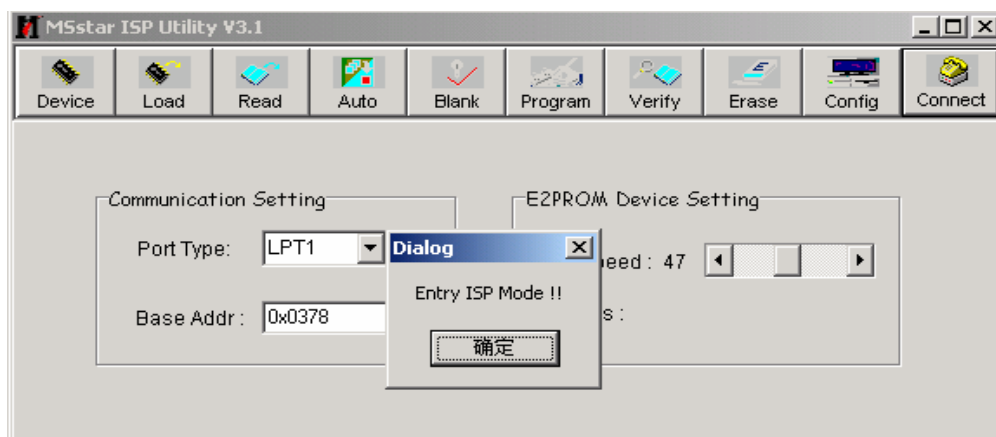




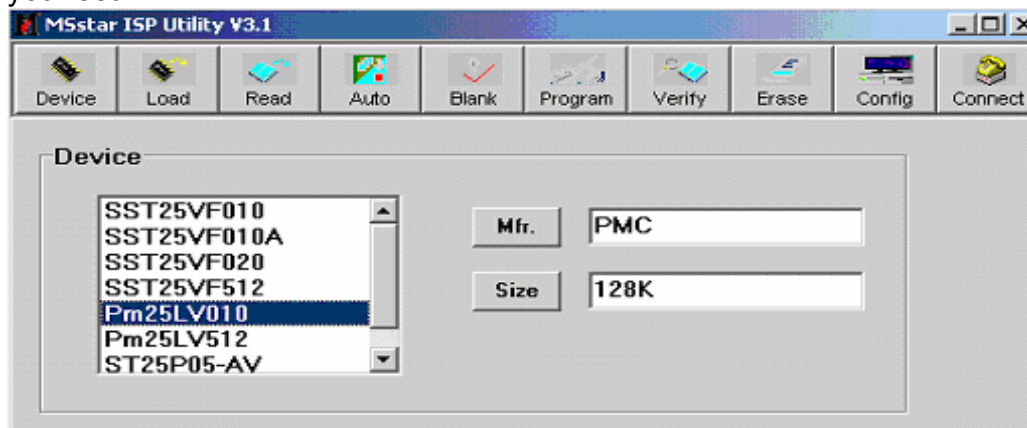
Step 3. Click “Config” button . Select the Port Type: LPT1 and the Base Addr : 0x378 on “Communication Setting” flame,and then the Speed: 47 on “E2PROM Device Setting” flame



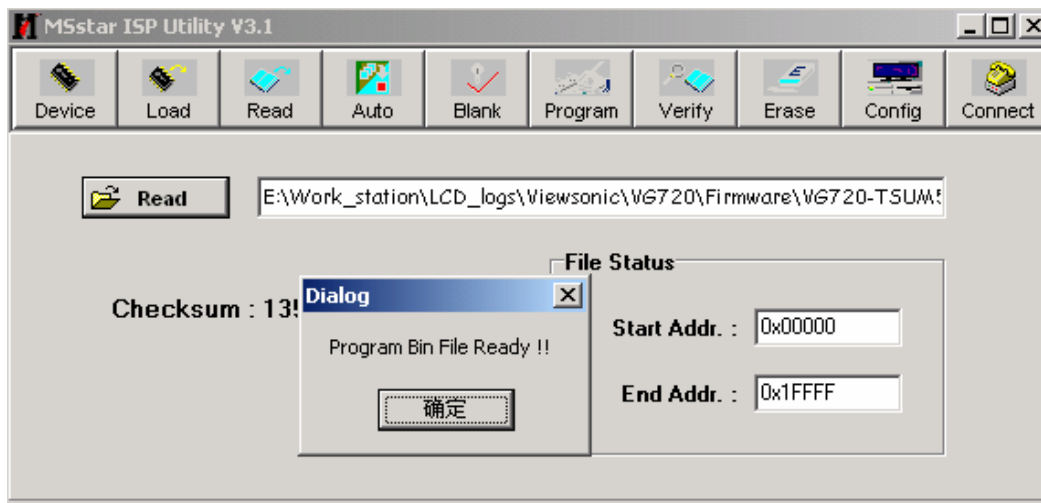
Step 4. Click “Connect” button. (On this step, if the connection is successful, the “Entry ISP Mode” Dialog will be showed. If not, the error dialog will be done.)



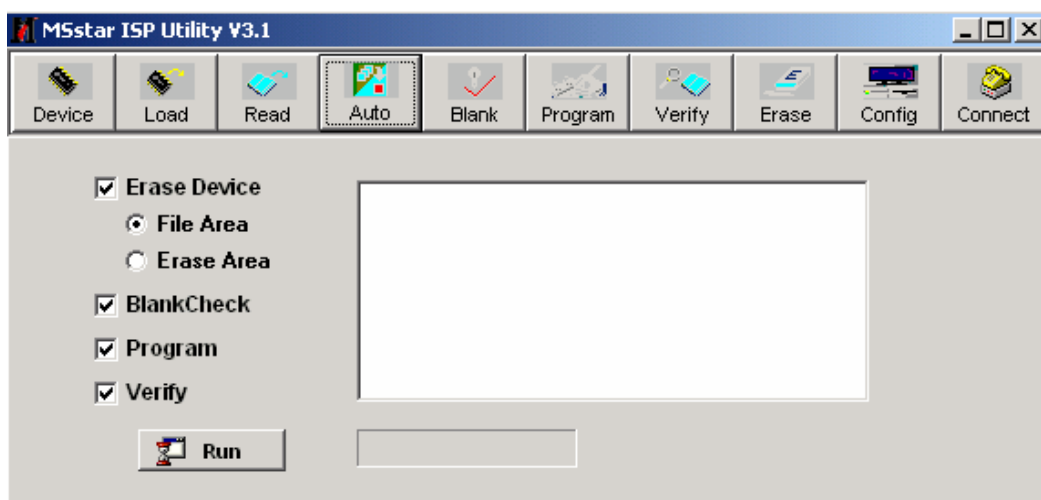
Step 5. Click “Device” button. Select the “PMC25LV010” or “SST25VF010” viewed on your set.



Step 6. Click “Read” button. Select the object bincode on your corresponding directory.



Step 7. Click “Auto” button. Execute the flashing action by clicking the “Run” button.



Step 8. If the flashing F/W has been completed, “Ok” message will be showed on the right TextBox.



Step 9. Unplug and replug power cord of VG720/VG920 set and then check the OSD operation and image on screen.

Step 10. At last, do "Memory Recall."

### 3.2 Setup Procedure

3.2.1 Connect P2 and P4 of Fixture with VGA ports of VG720 VG720/VG920by VGA Cable.

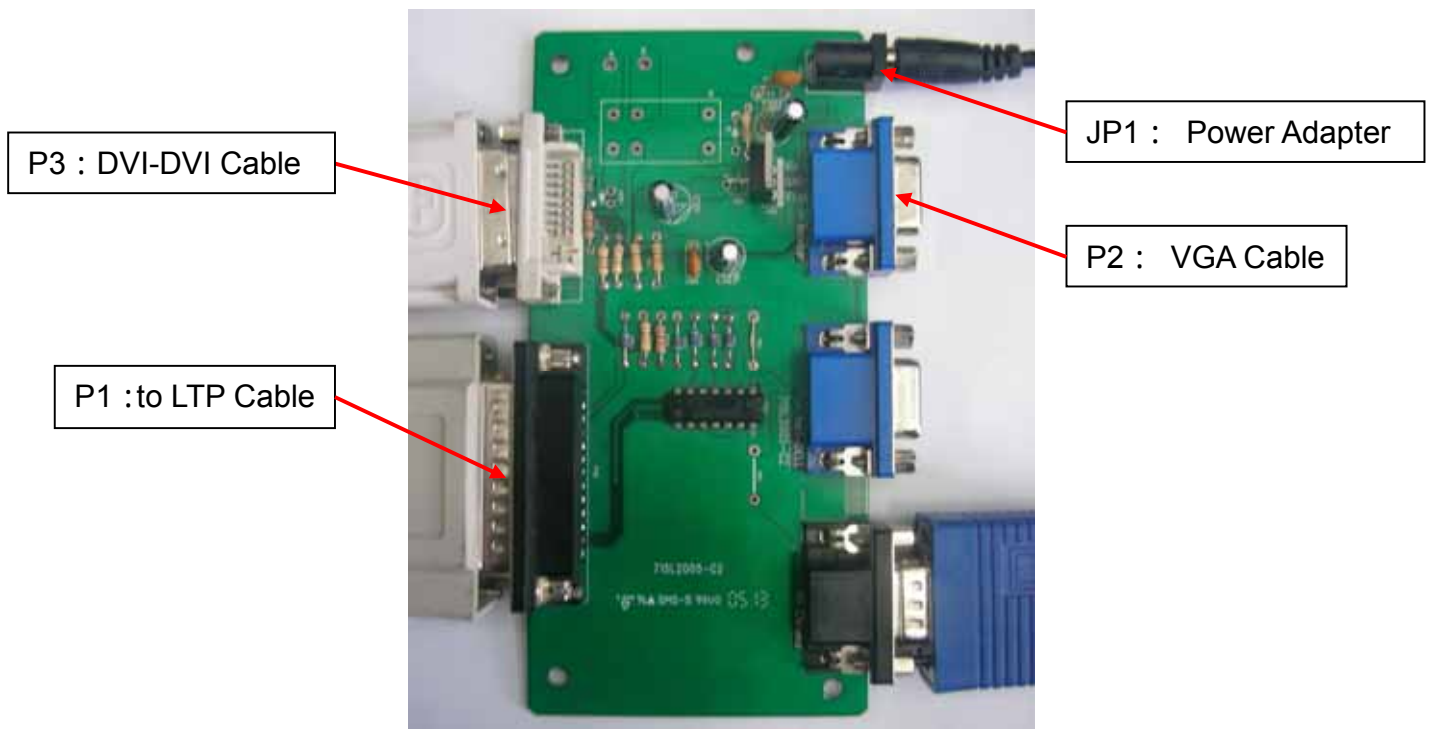
3.2.2 Connect P3 of Fixture with DVI port of VG720 by DVI-DVI Cable.

3.2.3 Connect P1 of Fixture with **Printer port** of PC by LPT Cable.

3.2.4 Plug Power Adapter to Fixture.

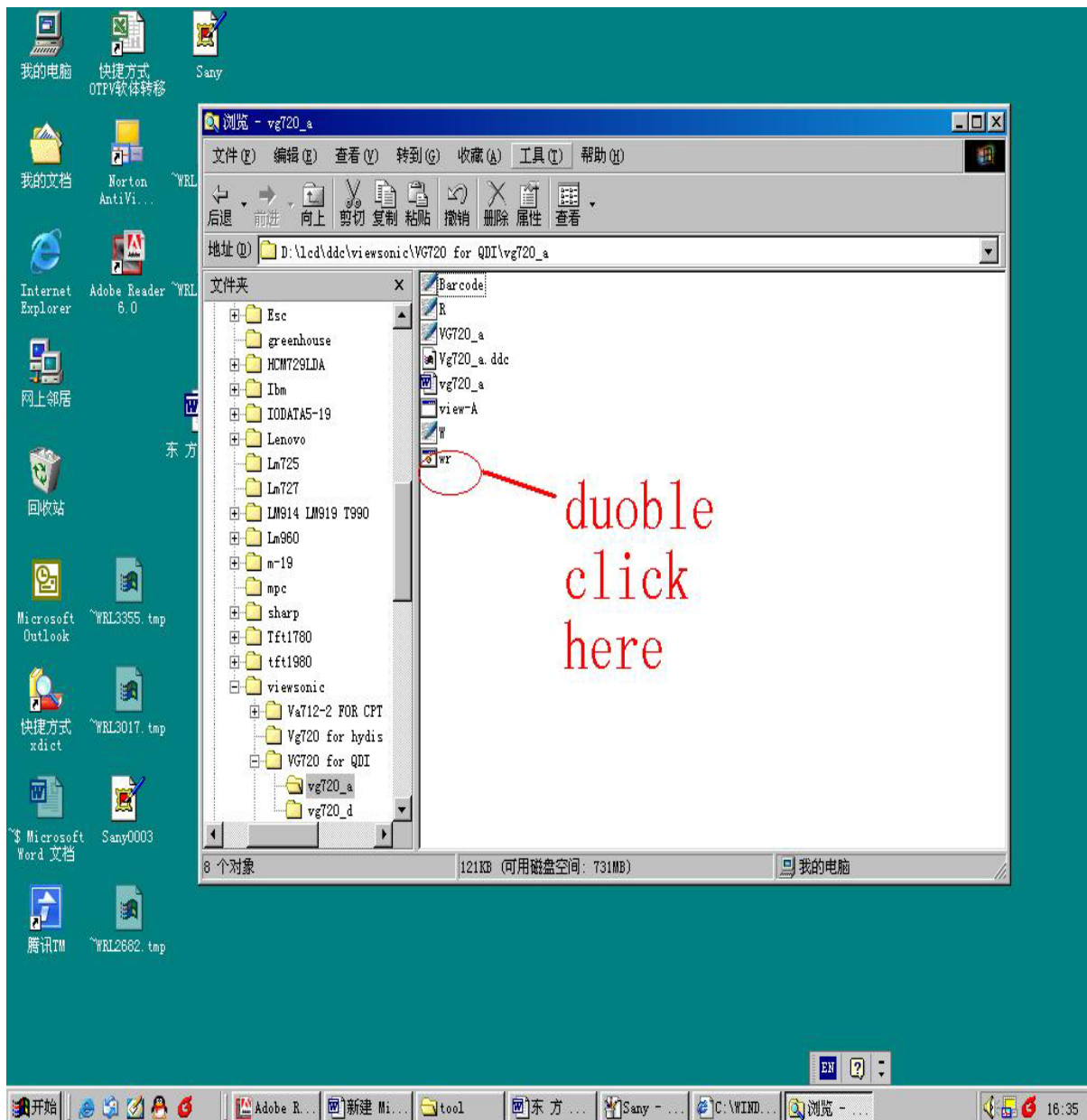
3.2.5 Connect Power Cord to VG720/VG920 Monitor.

3.2.6 Connect PC to the additional monitor.

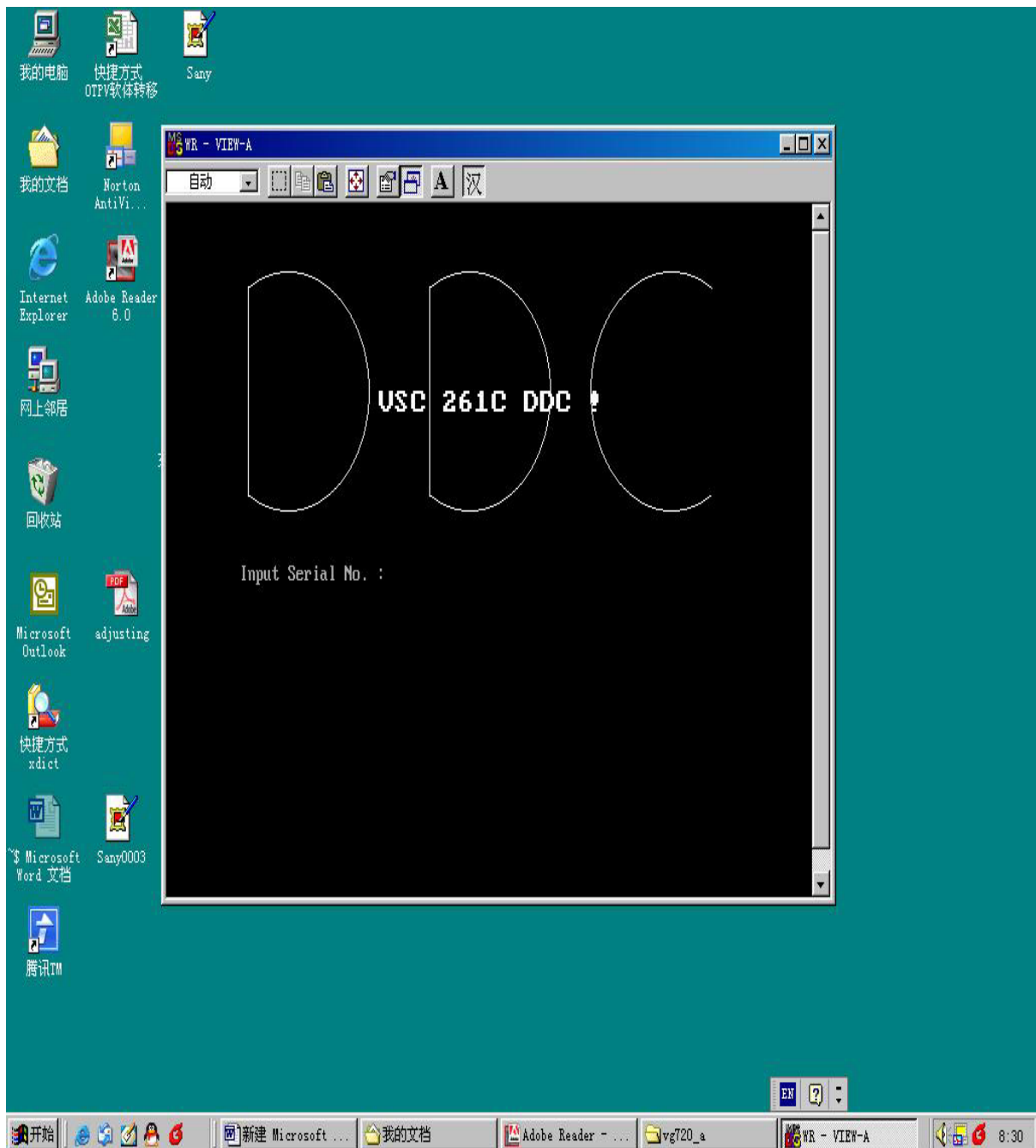


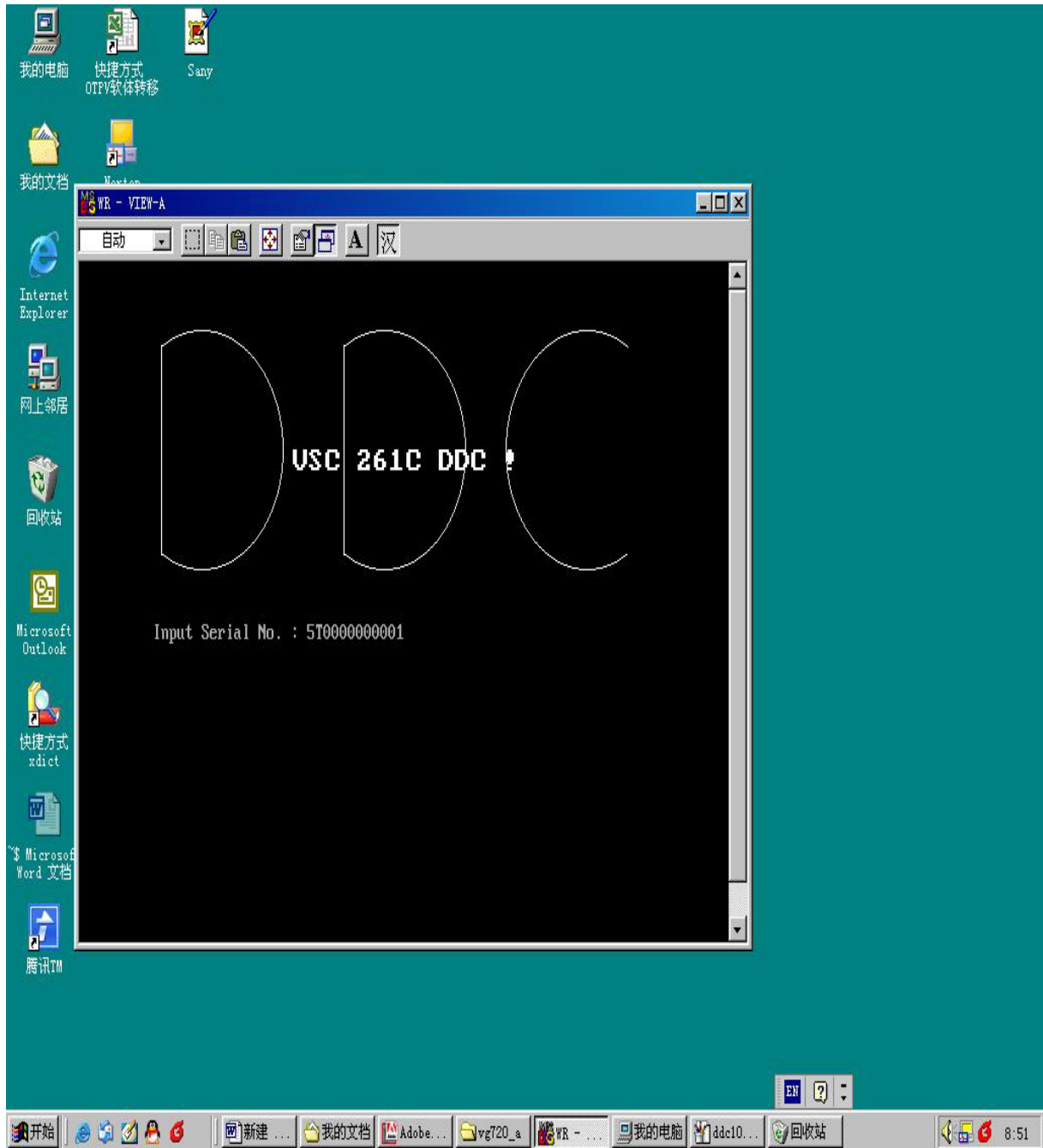
### 3.3 DDC Key In Procedure

Sep1.Select and execute DDc Key In program

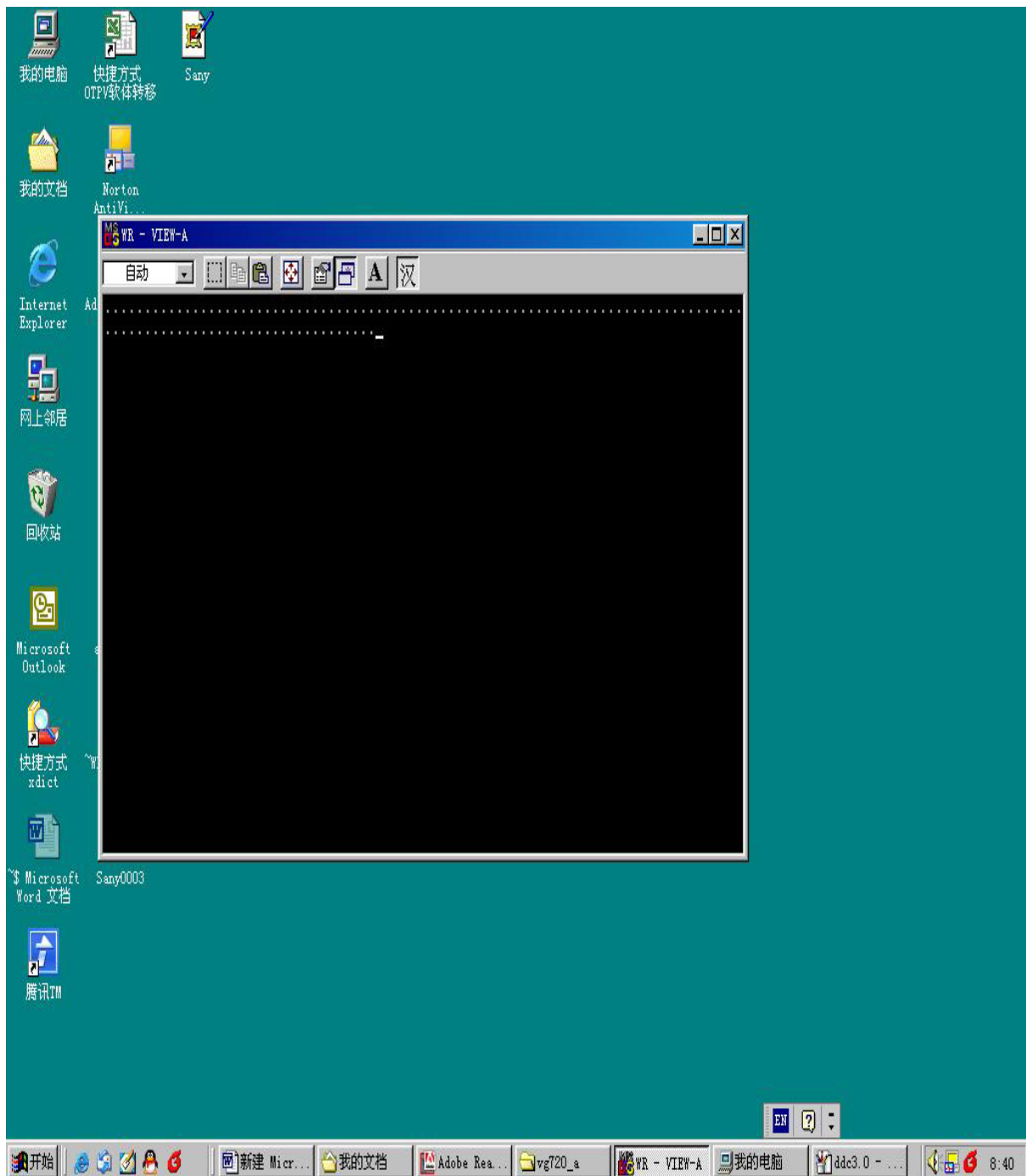


Sep2:Inpute the S/N and execute “Enter”

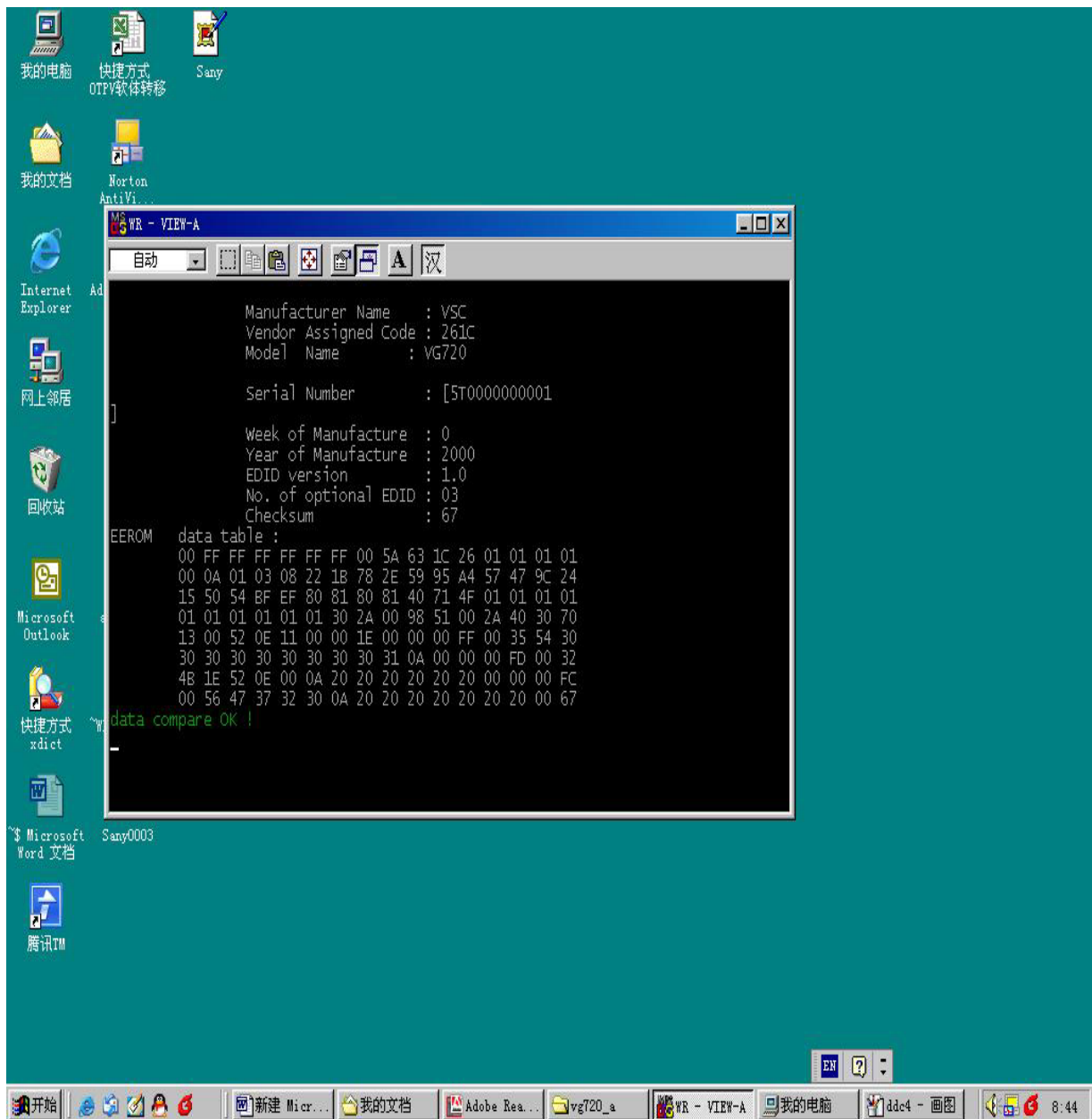




Sep3:Key the “Enter” and write the data

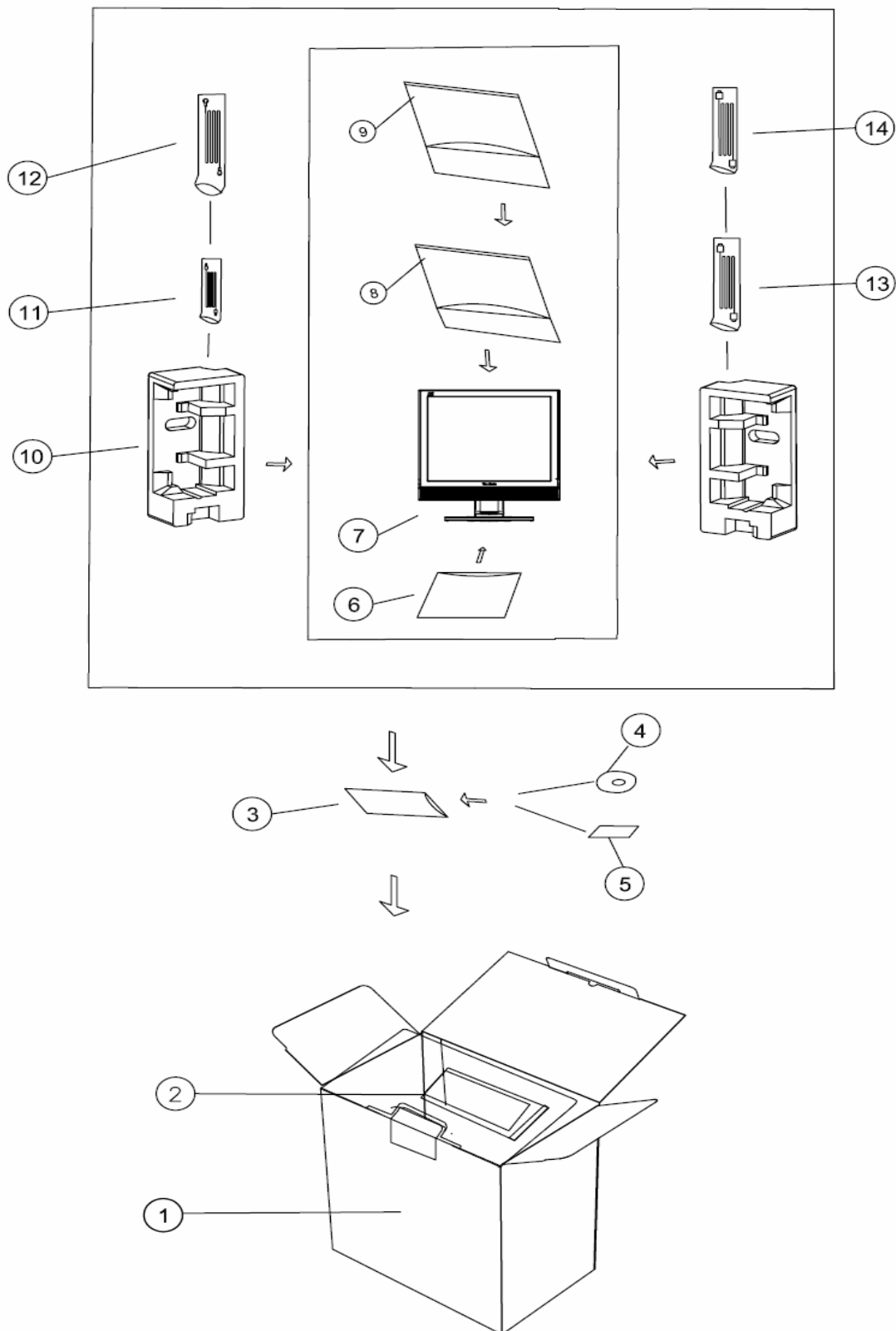


Sep4:If ddc program OK and show “data compare ok”





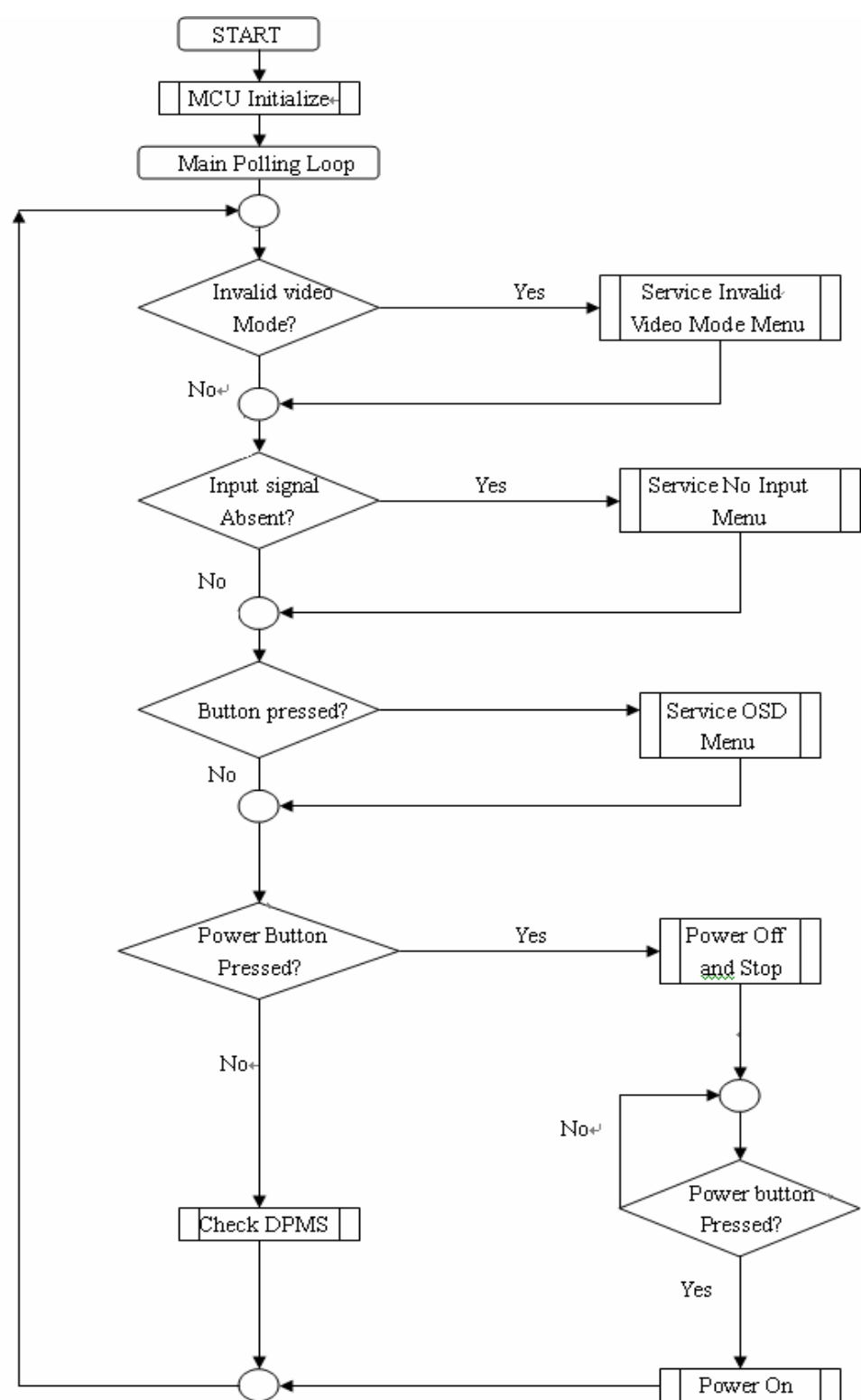
## 5.7 Packing For Shipping



**Packing Part List**

<b>ITEM</b>	<b>DESCRIPITON</b>	<b>PART NUMBER</b>	<b>Q'TY</b>
<b>1</b>	CARTON	C 44G3943709 1A	1
<b>2</b>	HANDLE1	50G 600 2	1
	HANDLE2	50G 600 3	1
<b>3</b>	PE BAG	45G 76 28 V3	1
<b>4</b>	CD MANUAL	70G1701709 4B	1
<b>5</b>	QSG	41G7801709 4A	1
<b>6</b>	EPE COVER	45G 88609 4	1
<b>7</b>	MONITOR	T980KA6HKGWVWABP	1
<b>8</b>	EPE COVER	45G 88609800	1
<b>9</b>	PE BAG	45G 88626 1	1
<b>10</b>	EPS	44G3943 1	1
		44G3943 2	1
<b>11</b>	AUDIO CABLE	89G 173 56507	1
<b>12</b>	POWER CORD	89G402A18N LS	1
<b>13</b>	SIGNAL CABLE	89G 728GAA902	1
<b>14</b>	DVI CABLE	89G1748GAA 11	1

6. Troubleshooting Flow Chart



## 7. Recommended Spare Part List

### VX920 BOM list ( T980KA6HKGWVABP )

Item	ViewSonic P/N	Ref. P/N	Description	Location	Universal number#	Q'ty
1		AUPC980A8P	AUPC BOARD			1
2		CBPC980KA6VWP	CONVERSION BOARD			1
3		KEPC980KB8SMTP	KEY BOARD			1
4		PWPC1942AUV1P	POWER BOARD			1
5		7G 1 S 15	WOODEN PALLET			0.025
6		11G 800 2	SPACER SUPPORT (RCM-5)			1
7		11G6054 1	PIN CONNECTOR			4
8		12G 434 2	RUBBER PAD			4
9		12G 437 1	THER MAL PAD			1
10		12G8000 2	FOOT PAD			2
11		15G8004 1	ROLLER PIN			4
12		15G8235 1	MAIN FRAME			1
13		15G8237 1	VESA COVER			1
14		15G8239 1	Kensington bracket			1
15		19G6014 2	塑料打包固定夹			0.2
16		20G 036 1	BASE DIE CASTING			1
17		23G3178709 4A	VSC17-LCD FRONT LOGO			1
18		23G3178709 6A	BIRD LOGO (E015-006)			1
19		33G4915 KR L	FUNCTION BUTTON			1
20		33G4916 1	POWER LENS			0
21		33G4917 KR X	ROLLER			4
22		33G4918 KR X	CABLE CLIP			2
23		34G1687AKR B	BEZEL			1
24		34G1688 KR B	REAR COVER			1
25		34G1689AKD B	COSMETIC TOP			1
26		34G1690 KD B	COSMETIC BOTTOM			1
27		34G1691 KR B	VESA COVER			1
28		34G1692 KR B	STAND FRONT			1
29		34G1693 KR B	STAND REAR			1
30		34G1694 KD B	BASE FRONT TOP			1
31		34G1695 KD B	BASE FRONT BOTTOM			1
32		34G1696 KR B	BASE			1
33		34G1697 KR X	SWIVEL COVER			1
34		37G 547 1	HINGE ASS'Y			1
35		40G 190709 1B	ID LABEL			1
36		40G 45760819A	机种标签			1
37		40G 459709 1B	CARTON LABEL			1

38		40G 459709 2B	S/N LABEL			1
39		40G 459709 4A	H/V WARNING LABEL			1
40		40G 459709 5A	HI-POT LABEL FOR 17-LCD			1
41		40G 581 26704	唛头纸 FOR CARTON/PALLET			0.01
42		40G 58162435A	MANUAL P/N LABEL			1.05
43		40G 58170918D	PALLET LABEL			0.25
44		40G457B709 1A	Hg LABEL			1
45		40G581B709 3A	8ms STICKER			1
46		41G7801709 4A	QSG			1
47		44G3231 15	EVA WASHER			1
48		44G3943 1	EPS(L)			1
49		44G3943 2	EPS(R)			1
50		44G6002 S 12	PAPER PLATE			0.025
51		44G6002 S 13	PAPER PLATE			0.025
52		44G9003210	CORNER PAPER			0.1
53		45G 76 28 V3	PE BAG			1
54		45G 77 3	TRANSPARENT SHEET			173
55		45G 88609 4	EPE COVER			1
56		45G 88609800	EPE BAG			1
57		45G 88626 1	PE BAG FOR MONITOR			1
58		50G 600 1 W	白色机用打包带			74
59		50G 600 2	HANDLE1			1
60		50G 600 3	HANDLE2			1
61		52G 1185 24	TAPE			65
62		52G 1216 A	铝箔胶带			1
63		52G 2191 D	美纹胶带			75
64		52G6019 1	YELLOW TAPE			5
65		52G6020 5	PROTECT FILM			1
66		52G6022 20	SMALL TAPE			100
67		52G6025 11907	Mylar sheet top			1
68		52G6025 11909	MYLAR BOTTOM			1
69		70G1701709 4B	CD MANUAL			1
70		78G 334 5	LCD 内置无源喇叭箱( 8 欧膜			1
71		85G 713 1	MAIN SHIELD			1
72		89G 173 56507	AUDIO CABLE			1
73		89G 728GAA902	SIGNAL CABLE			1
74		89G 728HAA902	SIGNAL CABLE			0
75		89G1748GAA 11	DVI CABLE			1
76		89G1748HAA 11	DVI SIGNAL CABLE			0
77		89G1748LAA 11	DVI CABLE			0

78		89G402A18N IS	POWER CABLE			0
79		89G402A18N LS	POWER CORD			1
80		95G8014 16921	WIRE HARNESS 16P-11P 3			1
81		95G8018 30915	WIRE HARNESS			1
82		M1G 130 6120	SCREW			4
83		M1G 130 6120	SCREW			2
84		M1G 140 8120	SCREW M4X8			4
85		M1G 140 10120	SCREW M4X10			5
86		M1G 330 4128	SCREW			2
87		M1G1030 6225	SCREW M3X6			1
88		M1G1140 6128	SCREW			1
89		M1G1730 6128	SCREW			4
90		M1G1730 6128	SCREW			3
91		M1G1730 6128	SCREW			2
92		M1G2940 10225	M4*10			4
93		Q1G 130 6 47	SCREW			3
94		Q1G 130 8120	SCREW			3
95		Q1G 130 12120	SCREW			1
96		Q1G 330 6120	SCREW M3X6MM			4
97		Q1G 330 6120	SCREW M3X6MM			2
98		Q1G 330 8120	SCREW			2
99		Q1G1030 10120	M3*10			4
100		Q1G1030 12120	M3*12			2
101		750GLU90N45 12	M190EN04 V5A(SZ)19" LCD			1
102		C 44G3943709 1A	CARTON			1
103		AUPC980A8P	AUPC BOARD			
104		AUPC980A8SMT	AUPC BOARD SMT			1
105		33G3802 4H	WAFER 4P RIGHT ANGLE	CN603		1
106		33G802414C H	WAFER	CN602		1
107		51G6002 1	导热胶			0.2
108		67G215B471 3H	LOW ESR CAP 470UF 16V 8	C620		1
109		67G305V100 7N GP	10UF50V KME50VB10-M-TP5	C601		1
110		67G305V100 7N GP	10UF50V KME50VB10-M-TP5	C605		1
111		67G305V100 7N GP	10UF50V KME50VB10-M-TP5	C617		1
112		67G305V100 7N GP	10UF50V KME50VB10-M-TP5	C625		1
113		88G 30214K	PHONE JACK 5PIN	CN601		1
114		90G6119 1	HEATSINK			1
115		AUPC980A8SMT	AUPC BOARD SMT			
116		56G 616 6	ID TPA3003D2PF BRG4 TQF	U601		1
117		61L0603000	CHIPR 00HM +-5% 1/10W	R602		1

118		61L0603102	CHIPR 1KOHM +-5% 1/10W	R608		1
119		61L0603103	CHIPR 10KOHM+-5% 1/10W	R601		1
120		61L0603103	CHIPR 10KOHM+-5% 1/10W	R609		1
121		61L0603103	CHIPR 10KOHM+-5% 1/10W	R610		1
122		61L0603124	CHIP 120KOHM 1/10W	R604		1
123		61L0603124	CHIP 120KOHM 1/10W	R607		1
124		61L0603393	39K OHM 1/10W	R611		1
125		61L0603393	39K OHM 1/10W	R612		1
126		65G0603101 31	CHIP 100P 50V NPO	C612		1
127		65G0603101 31	CHIP 100P 50V NPO	C615		1
128		65G0603102 32	CHIP 1000PF 50 X7R	C602		1
129		65G0603102 32	CHIP 1000PF 50 X7R	C603		1
130		65G0603102 32	CHIP 1000PF 50 X7R	C604		1
131		65G0603102 32	CHIP 1000PF 50 X7R	C630		1
132		65G0603102 32	CHIP 1000PF 50 X7R	C631		1
133		65G0603102 32	CHIP 1000PF 50 X7R	C632		1
134		65G0603103 32	0.01UF 50V X7R	C607		1
135		65G0603103 32	0.01UF 50V X7R	C608		1
136		65G0603103 32	0.01UF 50V X7R	C626		1
137		65G0603103 32	0.01UF 50V X7R	C629		1
138		65G0603104 12	MLCC	C606		1
139		65G0603104 12	MLCC	C609		1
140		65G0603104 12	MLCC	C618		1
141		65G0603104 12	MLCC	C621		1
142		65G0603104 12	MLCC	C627		1
143		65G0603104 12	MLCC	C628		1
144		65G0603105 12	CHIP CAP 1UF.	C610		1
145		65G0603105 12	CHIP CAP 1UF.	C611		1
146		65G0603105 12	CHIP CAP 1UF.	C613		1
147		65G0603105 12	CHIP CAP 1UF.	C614		1
148		65G0603105 12	CHIP CAP 1UF.	C616		1
149		65G0603105 12	CHIP CAP 1UF.	C619		1
150		65G0603105 12	CHIP CAP 1UF.	C623		1
151		65G0603105 12	CHIP CAP 1UF.	C624		1
152		65G0603221 32	220PF/50V X7R	C622		1
153		71G 56G301 EA	CHIP BEAD	FB602		1
154		71G 56G301 EA	CHIP BEAD	FB604		1
155		71G 56G301 EA	CHIP BEAD	FB610		1
156		71G 56G301 EA	CHIP BEAD	FB612		1
157		71G 57G301 EA	CHIP BEAD 600 OHM 1206	FB605		1

158		71G 57G301 EA	CHIP BEAD 600 OHM 1206	FB606		1
159		71G 57G601	贴片磁珠	FB601		1
160		71G 57G601	贴片磁珠	FB607		1
161		71G 57G601	贴片磁珠	FB608		1
162		71G 57G601	贴片磁珠	FB609		1
163		715G1566 1	AUDIO			1
164		CBPC980KA6VWP	CONVERSION BOARD			
165		AIC980KA6VWP	MAIN BOARD			1
166		33G801714H H	PIN2*7	CN404		1
167		33G801724A H	PIN 24P 2.0MM RIGHT ANG	CN101		1
168		33G8027 12	WAFER 2*6P 2.0MM R/A	CN701		1
169		33G8027 16	WAFER 16PIN 2.0MM DIP	CN403		1
170		40G 45762412B	CBPC LABEL			1.03
171		51G6002 1	导热胶			0.2
172		67G215L101 4N	LOW ESR EC 100UF 25V NC	C707		1
173		67G215L101 4N	LOW ESR EC 100UF 25V NC	C710		1
174		67G215L101 4N	LOW ESR EC 100UF 25V NC	C712		1
175		67G309V100 3	Electrolytic CAP	C408		1
176		67G309V100 3	Electrolytic CAP	C717		1
177		67G309V109 3	1UF +-20% 16V	C705		1
178		67G309V479 3	4.7UF +-20% 16V	C403		1
179		67G309V479 3	4.7UF +-20% 16V	C702		1
180		88G 35315F H	D-SUB 15PIN	CN405		1
181		88G 35315F HJ	D-SUB 15PIN	CN405		0
182		88G 35424F H	DVID CONN 24P FEMALE 90	CN406		1
183		90G6250 1 GP	散热片			1
184		93G 22 53	CRYSTAL 14.31818MHZ HC-	X401		1
185		AIC980KA6VWP	MAIN BOARD			
186		56G 562108	TSUM56AK-LF PQFP-100	U401		1
187		56G 563 7	AIC1084-33PM TO-263	U702		1
188		56G 643 6	IC MICROPROCESSOR MAX81	U406		1
189		56G1133 34	IC M24C02-WMN6TP	U404		1
190		56G1133 34	IC M24C02-WMN6TP	U405		1
191		56G1133 63AA2	PM25LV010-25SCE	U402		1
192		56G1133 74AA2	SST25VF010A-33-4C-SAE S	U402		0
193		56G113356A	24LC16B/SNG SOIC-8PIN	U403		1
194		57G 417 4	PMBS3904/PLILIPS	Q402		1
195		57G 417 4	PMBS3904/PLILIPS	Q404		1
196		57G 417 4	PMBS3904/PLILIPS	Q701		1
197		57G 417 4	PMBS3904/PLILIPS	Q703		1



198		57G 417 4	PMBS3904/PLILIPS	Q706		1
199		57G 417 6	PMBS3906 PNP	Q401		1
200		57G 417 6	PMBS3906 PNP	Q403		1
201		57G 417 17 T	PZT2907A SOT-223	Q702		1
202		57G 763 1	A03401L	Q704		1
203		61L0603000	CHIPR 00HM +-5% 1/10W	FB410		1
204		61L0603000	CHIPR 00HM +-5% 1/10W	FB411		1
205		61L0603000	CHIPR 00HM +-5% 1/10W	FB412		1
206		61L0603000	CHIPR 00HM +-5% 1/10W	R419		1
207		61L0603000	CHIPR 00HM +-5% 1/10W	R421		1
208		61L0603000	CHIPR 00HM +-5% 1/10W	R431		1
209		61L0603000	CHIPR 00HM +-5% 1/10W	R432		1
210		61L0603000	CHIPR 00HM +-5% 1/10W	R720		1
211		61L0603000	CHIPR 00HM +-5% 1/10W	R721		1
212		61L0603100	CHIPR 10 OHM 1/10W	R462		1
213		61L0603100	CHIPR 10 OHM 1/10W	R463		1
214		61L0603100	CHIPR 10 OHM 1/10W	R464		1
215		61L0603100	CHIPR 10 OHM 1/10W	R465		1
216		61L0603100	CHIPR 10 OHM 1/10W	R466		1
217		61L0603100	CHIPR 10 OHM 1/10W	R467		1
218		61L0603100	CHIPR 10 OHM 1/10W	R468		1
219		61L0603100	CHIPR 10 OHM 1/10W	R469		1
220		61L0603100 1F	CHIP 1KOHM 1/10W 1%	R478		1
221		61L0603100 1F	CHIP 1KOHM 1/10W 1%	R479		1
222		61L0603101	CHIPR 1000HM +-5% 1/10W	R411		1
223		61L0603101	CHIPR 1000HM +-5% 1/10W	R418		1
224		61L0603101	CHIPR 1000HM +-5% 1/10W	R420		1
225		61L0603101	CHIPR 1000HM +-5% 1/10W	R427		1
226		61L0603101	CHIPR 1000HM +-5% 1/10W	R428		1
227		61L0603101	CHIPR 1000HM +-5% 1/10W	R429		1
228		61L0603101	CHIPR 1000HM +-5% 1/10W	R441		1
229		61L0603101	CHIPR 1000HM +-5% 1/10W	R442		1
230		61L0603101	CHIPR 1000HM +-5% 1/10W	R443		1
231		61L0603101	CHIPR 1000HM +-5% 1/10W	R445		1
232		61L0603101	CHIPR 1000HM +-5% 1/10W	R453		1
233		61L0603101	CHIPR 1000HM +-5% 1/10W	R454		1
234		61L0603101	CHIPR 1000HM +-5% 1/10W	R455		1
235		61L0603101	CHIPR 1000HM +-5% 1/10W	R456		1
236		61L0603101	CHIPR 1000HM +-5% 1/10W	R458		1
237		61L0603101	CHIPR 1000HM +-5% 1/10W	R704		1

238		61L0603102	CHIPR 1KOHM +-5% 1/10W	R430		1
239		61L0603102	CHIPR 1KOHM +-5% 1/10W	R446		1
240		61L0603102	CHIPR 1KOHM +-5% 1/10W	R447		1
241		61L0603102	CHIPR 1KOHM +-5% 1/10W	R470		1
242		61L0603102	CHIPR 1KOHM +-5% 1/10W	R476		1
243		61L0603102	CHIPR 1KOHM +-5% 1/10W	R477		1
244		61L0603102	CHIPR 1KOHM +-5% 1/10W	R701		1
245		61L0603103	CHIPR 10KOHM+-5% 1/10W	R406		1
246		61L0603103	CHIPR 10KOHM+-5% 1/10W	R408		1
247		61L0603103	CHIPR 10KOHM+-5% 1/10W	R412		1
248		61L0603103	CHIPR 10KOHM+-5% 1/10W	R413		1
249		61L0603103	CHIPR 10KOHM+-5% 1/10W	R415		1
250		61L0603103	CHIPR 10KOHM+-5% 1/10W	R416		1
251		61L0603103	CHIPR 10KOHM+-5% 1/10W	R424		1
252		61L0603103	CHIPR 10KOHM+-5% 1/10W	R425		1
253		61L0603103	CHIPR 10KOHM+-5% 1/10W	R426		1
254		61L0603103	CHIPR 10KOHM+-5% 1/10W	R450		1
255		61L0603103	CHIPR 10KOHM+-5% 1/10W	R451		1
256		61L0603103	CHIPR 10KOHM+-5% 1/10W	R452		1
257		61L0603103	CHIPR 10KOHM+-5% 1/10W	R457		1
258		61L0603103	CHIPR 10KOHM+-5% 1/10W	R459		1
259		61L0603103	CHIPR 10KOHM+-5% 1/10W	R460		1
260		61L0603103	CHIPR 10KOHM+-5% 1/10W	R461		1
261		61L0603103	CHIPR 10KOHM+-5% 1/10W	R471		1
262		61L0603103	CHIPR 10KOHM+-5% 1/10W	R484		1
263		61L0603103	CHIPR 10KOHM+-5% 1/10W	R485		1
264		61L0603103	CHIPR 10KOHM+-5% 1/10W	R487		1
265		61L0603103	CHIPR 10KOHM+-5% 1/10W	R708		1
266		61L0603103	CHIPR 10KOHM+-5% 1/10W	R711		1
267		61L0603103	CHIPR 10KOHM+-5% 1/10W	R714		1
268		61L0603103	CHIPR 10KOHM+-5% 1/10W	R717		1
269		61L0603103	CHIPR 10KOHM+-5% 1/10W	R727		1
270		61L0603121	CHIPR 120 OHM 1/10W	R409		1
271		61L0603121	CHIPR 120 OHM 1/10W	R414		1
272		61L0603150 1F	CHIP 1.5KOHM 1/16W 1%	R480		1
273		61L0603202	CHIPR 2KOHM+-5%1/10W	R703		1
274		61L0603203	CHIPR 20KOHM +-5% 1/10W	R417		1
275		61L0603222	CHIPR 2.2KOHM+-5%1/10W	R448		1
276		61L0603222	CHIPR 2.2KOHM+-5%1/10W	R449		1
277		61L0603223	CHIPR 22K OHM +-5% 1/10	R405		1

278		61L0603390 0F	3900HM +-1%	R403		1
279		61L0603392	CHIP 3.9K OHM 1/10W	R474		1
280		61L0603392	CHIP 3.9K OHM 1/10W	R475		1
281		61L0603471	CHIPR 4700HM+-5%1/10W	R437		1
282		61L0603472	CHIP 4.7KOHM +-5% 1/10	R422		1
283		61L0603472	CHIP 4.7KOHM +-5% 1/10	R423		1
284		61L0603472	CHIP 4.7KOHM +-5% 1/10	R705		1
285		61L0603472	CHIP 4.7KOHM +-5% 1/10	R707		1
286		61L0603472	CHIP 4.7KOHM +-5% 1/10	R712		1
287		61L0603472	CHIP 4.7KOHM +-5% 1/10	R725		1
288		61L0603510	CHIP 510HM 5% 1/10W	R702		1
289		61L0603513	CHIP 51K OHM	R723		1
290		61L0603560	CHIPR 56 OHM +-5% 1/10W	R434		1
291		61L0603560	CHIPR 56 OHM +-5% 1/10W	R435		1
292		61L0603560	CHIPR 56 OHM +-5% 1/10W	R436		1
293		61L0603750	CHIPR 750HM+-5%1/10W	R438		1
294		61L0603750	CHIPR 750HM+-5%1/10W	R439		1
295		61L0603750	CHIPR 750HM+-5%1/10W	R440		1
296		65G0603104 32	CHIP 0.1UF 50V X7R	C401		1
297		65G0603104 32	CHIP 0.1UF 50V X7R	C404		1
298		65G0603104 32	CHIP 0.1UF 50V X7R	C405		1
299		65G0603104 32	CHIP 0.1UF 50V X7R	C406		1
300		65G0603104 32	CHIP 0.1UF 50V X7R	C407		1
301		65G0603104 32	CHIP 0.1UF 50V X7R	C409		1
302		65G0603104 32	CHIP 0.1UF 50V X7R	C410		1
303		65G0603104 32	CHIP 0.1UF 50V X7R	C411		1
304		65G0603104 32	CHIP 0.1UF 50V X7R	C412		1
305		65G0603104 32	CHIP 0.1UF 50V X7R	C413		1
306		65G0603104 32	CHIP 0.1UF 50V X7R	C414		1
307		65G0603104 32	CHIP 0.1UF 50V X7R	C415		1
308		65G0603104 32	CHIP 0.1UF 50V X7R	C416		1
309		65G0603104 32	CHIP 0.1UF 50V X7R	C417		1
310		65G0603104 32	CHIP 0.1UF 50V X7R	C419		1
311		65G0603104 32	CHIP 0.1UF 50V X7R	C420		1
312		65G0603104 32	CHIP 0.1UF 50V X7R	C422		1
313		65G0603104 32	CHIP 0.1UF 50V X7R	C424		1
314		65G0603104 32	CHIP 0.1UF 50V X7R	C425		1
315		65G0603104 32	CHIP 0.1UF 50V X7R	C426		1
316		65G0603104 32	CHIP 0.1UF 50V X7R	C427		1
317		65G0603104 32	CHIP 0.1UF 50V X7R	C428		1

318		65G0603104 32	CHIP 0.1UF 50V X7R	C429		1
319		65G0603104 32	CHIP 0.1UF 50V X7R	C430		1
320		65G0603104 32	CHIP 0.1UF 50V X7R	C439		1
321		65G0603104 32	CHIP 0.1UF 50V X7R	C440		1
322		65G0603104 32	CHIP 0.1UF 50V X7R	C441		1
323		65G0603104 32	CHIP 0.1UF 50V X7R	C444		1
324		65G0603104 32	CHIP 0.1UF 50V X7R	C445		1
325		65G0603104 32	CHIP 0.1UF 50V X7R	C446		1
326		65G0603104 32	CHIP 0.1UF 50V X7R	C447		1
327		65G0603104 32	CHIP 0.1UF 50V X7R	C448		1
328		65G0603104 32	CHIP 0.1UF 50V X7R	C449		1
329		65G0603104 32	CHIP 0.1UF 50V X7R	C450		1
330		65G0603104 32	CHIP 0.1UF 50V X7R	C451		1
331		65G0603104 32	CHIP 0.1UF 50V X7R	C452		1
332		65G0603104 32	CHIP 0.1UF 50V X7R	C453		1
333		65G0603104 32	CHIP 0.1UF 50V X7R	C454		1
334		65G0603104 32	CHIP 0.1UF 50V X7R	C706		1
335		65G0603104 32	CHIP 0.1UF 50V X7R	C709		1
336		65G0603104 32	CHIP 0.1UF 50V X7R	C711		1
337		65G0603104 32	CHIP 0.1UF 50V X7R	C713		1
338		65G0603104 32	CHIP 0.1UF 50V X7R	C714		1
339		65G0603104 32	CHIP 0.1UF 50V X7R	C715		1
340		65G0603104 32	CHIP 0.1UF 50V X7R	C718		1
341		65G0603220 32	Chip Cap 22PF	C421		1
342		65G0603220 32	Chip Cap 22PF	C423		1
343		65G0603221 32	220PF/50V X7R	C443		1
344		65G0603330 32	CHIP 33PF 50V NP0	C442		1
345		65G0603473 32	CHIP 47NF 50V X7R	C432		1
346		65G0603473 32	CHIP 47NF 50V X7R	C433		1
347		65G0603473 32	CHIP 47NF 50V X7R	C434		1
348		65G0603473 32	CHIP 47NF 50V X7R	C435		1
349		65G0603473 32	CHIP 47NF 50V X7R	C436		1
350		65G0603473 32	CHIP 47NF 50V X7R	C437		1
351		65G0603473 32	CHIP 47NF 50V X7R	C438		1
352		65G0805105 37	CHIP 1UF 50V Y5V	C708		1
353		71G 56Z601	2.0X1.2 100M=6000HM	FB401		1
354		71G 56Z601	2.0X1.2 100M=6000HM	FB402		1
355		71G 56Z601	2.0X1.2 100M=6000HM	FB403		1
356		71G 56Z601	2.0X1.2 100M=6000HM	FB404		1
357		71G 56Z601	2.0X1.2 100M=6000HM	FB405		1

358		71G 56Z601	2.0X1.2 100M=6000HM	FB406		1
359		71G 56Z601	2.0X1.2 100M=6000HM	FB407		1
360		71G 56Z601	2.0X1.2 100M=6000HM	FB408		1
361		71G 56Z601 M	CHIP BEAD 0805 6000HM	FB401		0
362		71G 56Z601 M	CHIP BEAD 0805 6000HM	FB402		0
363		71G 56Z601 M	CHIP BEAD 0805 6000HM	FB403		0
364		71G 56Z601 M	CHIP BEAD 0805 6000HM	FB404		0
365		71G 56Z601 M	CHIP BEAD 0805 6000HM	FB405		0
366		71G 56Z601 M	CHIP BEAD 0805 6000HM	FB406		0
367		71G 56Z601 M	CHIP BEAD 0805 6000HM	FB407		0
368		71G 56Z601 M	CHIP BEAD 0805 6000HM	FB408		0
369		71G 59B121	贴片磁珠	FB409		1
370		93G 39147SEM	ZMM5V6	D414		1
371		93G 39147SEM	ZMM5V6	D415		1
372		93G 39147SEM	ZMM5V6	D416		1
373		93G 39147SEM	ZMM5V6	D426		1
374		93G 39149	ZENER MLL5232B BY FULL	D406		1
375		93G 39149	ZENER MLL5232B BY FULL	D408		1
376		93G 39149	ZENER MLL5232B BY FULL	D409		1
377		93G 39149	ZENER MLL5232B BY FULL	D410		1
378		93G 39149	ZENER MLL5232B BY FULL	D411		1
379		93G 39149	ZENER MLL5232B BY FULL	D412		1
380		93G 64 42 P	BAV70 DIODE	D407		1
381		93G 64 42 P	BAV70 DIODE	D413		1
382		93G 6432P	LL4148 MINI-MELF/LL-34	D701		1
383		93G 6432P	LL4148 MINI-MELF/LL-34	D702		1
384		93G 6433P	BAV99 SOT-23	D403		1
385		93G 6433P	BAV99 SOT-23	D404		1
386		93G 6433P	BAV99 SOT-23	D405		1
387		93G 6433P	BAV99 SOT-23	D417		1
388		93G 6433P	BAV99 SOT-23	D418		1
389		93G 6433P	BAV99 SOT-23	D419		1
390		93G 6433P	BAV99 SOT-23	D420		1
391		93G 6433P	BAV99 SOT-23	D421		1
392		93G 6433P	BAV99 SOT-23	D422		1
393		93G 6433P	BAV99 SOT-23	D423		1
394		93G 6433P	BAV99 SOT-23	D424		1
395		93G 39S 45 T	RLZ36B ZENER DIODE	D401		1
396		93G 39S 45 T	RLZ36B ZENER DIODE	D402		1
397		93G 39S 45 T	RLZ36B ZENER DIODE	D425		1

398		93G1004 4	SCHOTTKY DIODE 1A 40V S	D704		1
399		715G1558 1 2	MAIN BOARD			1
400		KEPC980KB8SMTP	KEY BOARD			
401		33G803411C	WAFER 1.0MM SMT 11P	CN001		1
402		77G 604 2 T0	TACT SWITCH	SW001		1
403		77G 604 2 T0	TACT SWITCH	SW002		1
404		77G 604 2 T0	TACT SWITCH	SW003		1
405		77G 604 2 T0	TACT SWITCH	SW004		1
406		77G 604 2 T0	TACT SWITCH	SW005		1
407		77G 604 2 T0	TACT SWITCH	SW006		1
408		77G 604 2 T0	TACT SWITCH	SW007		1
409		77G 604 2 T0	TACT SWITCH	SW008		1
410		81G 14501 KT	KTL-HKBGE33B-TRB	LED001		1
411		715G1602 1	KEPC			1
412		PWPC1942AUV1P	POWER BOARD			
413		PW1942AUV1SMTP	MAIN BOARD FOR SMT			1
414		33G8021 2D U	CON.2PR/A	CN201		1
415		33G8021 2D U	CON.2PR/A	CN202		1
416		33G8021 2D U	CON.2PR/A	CN203		1
417		33G8021 2D U	CON.2PR/A	CN204		1
418		33G8021 2D AC	WAFER	CN201		0
419		33G8021 2D AC	WAFER	CN202		0
420		33G8021 2D AC	WAFER	CN203		0
421		33G8021 2D AC	WAFER	CN204		0
422		33G8029 3A	WAFER 3.96MM	CN901		1
423		40G 45762412B	CBPC LABEL			1
424		51G 6 4503	RTV 胶			2
425		56G 139 3	PC123FY2 BY SHARP	IC902		0
426		56G 139 3A	PC123Y22FZ0F	IC902		1
427		61G 58080 WT	NTCR	NR901		1
428		61G152M398 64	RES.	R918		1
429		63G 10747410S	0.47UF +-10% 250VAC	C903		1
430		63G210J3342B2	0.33uF 250V PMS TAIYANG	C221		0
431		63G211J334 AB	0.33UF 5% 160V	C221		1
432		65G 2K152 5A	1500PE 10% Y5P 2KV	C905		1
433		65G 3J1206EM	12PF 5% SL 3KV MURATA	C211		1
434		65G 3J1206EM	12PF 5% SL 3KV MURATA	C212		1
435		65G 3J1206EM	12PF 5% SL 3KV MURATA	C213		1
436		65G 3J1206EM	12PF 5% SL 3KV MURATA	C214		1
437		65G 3J1206ET	12PF 5% SL 3KV TDK	C211		0

438		65G 3J1206ET	12PF 5% SL 3KV TDK	C212		0
439		65G 3J1206ET	12PF 5% SL 3KV TDK	C213		0
440		65G 3J1206ET	12PF 5% SL 3KV TDK	C214		0
441		65G305M1022BJ	1000PF Y2 400V 20% BY J	C901		0
442		65G305M1022BJ	1000PF Y2 400V 20% BY J	C902		0
443		65G305M1022EM	1000pF Y2 250V 20% BY M	C901		1
444		65G305M1022EM	1000pF Y2 250V 20% BY M	C902		1
445		65G306M1022BM GP	Y1.CAP.001UF 250VAC MUR	C935		1
446		65G306M1022BP	1000PF 400VAC/250VAC Y1	C935		0
447		65G306M2222BM GP	2200PF +-20% 250V AC	C900		1
448		65G306M2222BP	2200PF Y1 400 20% BY UK	C900		0
449		67G215H102 3N	KY16VB1000M-1 10*20	C924		0
450		67G215L101 4N	LOW ESR EC 100UF 25V NC	C906		1
451		67G215L102 3N	KY16VB1000M-1 10*20	C924		0
452		67G215L102 3R	LOW ESR 1000UF +-20% 16	C924		1
453		67G215L102 4N	LOW ESR 1000UF 25V	C923		0
454		67G215L102 4N	LOW ESR 1000UF 25V	C931		0
455		67G215L102 4R	1000UF/25V	C923		1
456		67G215L102 4R	1000UF/25V	C931		1
457		67G215L470 4N	47UF/25V	C909		1
458		67G215L471 4N	470UF25V KY25VB470-M-L	C203		0
459		67G215L471 4N	470UF25V KY25VB470-M-L	C925		0
460		67G215L471 4R	470UF/25V	C203		1
461		67G215L471 4R	470UF/25V	C925		1
462		67G215P102 3K	LOW ESR EC 1000UF 16V	C924		0
463		67G215P102 4K	LOW ESR EC 1000UF 25V	C923		0
464		67G215P102 4K	LOW ESR EC 1000UF 25V	C931		0
465		67G215P471 3K	LOW ESR EC 470UF 16V	C926		0
466		67G215P471 4K	LOW ESR EC 470UF 25V	C203		0
467		67G215P471 4K	LOW ESR EC 470UF 25V	C925		0
468		67G215S10115K	LOW ESR EC 100uF 450V	C904		1
469		67G215S10115N	1000/450PAG450VB100M-L	C904		0
470		67G215V102 3N GP	KY10VB1000M-L10*16	C924		0
471		67G215V102 3R GP	LOW E.S.R 100UF +-20% 1	C924		0
472		67G215Y1014KT	LOW ESR EC 100UF 25V	C906		0
473		67G215Y4704KT	LOW ESR EC 47UF 25V	C909		0
474		67G215Y471 3N	470UF 16V KY16VB470M-L	C926		0
475		67G215Y4713NV	KY16VB470M-CC3 8*15MM	C926		0
476		67G215Y4713RV	LOW E.S.R 470UF +-20% 1	C926		1
477		73G 174 64 L	LINE FILTER LF-004057-1	L902		1

478		73G 174 64 LS	LINE FILTER	L902		0
479		73G 174 64 YS	LINE FILTER	L902		0
480		73G 253 91 H	阻流圈	L903		0
481		73G 253 91 H	阻流圈	L904		0
482		73G 253 91 L	CHOKE BY LI TA	L903		1
483		73G 253 91 L	CHOKE BY LI TA	L904		1
484		73G 253 91 LS	CHOKE COIL	L903		0
485		73G 253 91 LS	CHOKE COIL	L904		0
486		73G 253166 L	CHOKE	L201		0
487		73G 253166 LS	CHOCK COIL	L201		0
488		73G 253166 YS	CHOKE	L201		1
489		73L 174 50 LH	LINE FILTER	L901		1
490		73L 174 50LSH	LINE FILTER	L901		0
491		80GL17T 28 DN	TRANSFORMER	PT201		0
492		80GL17T 28 DN	TRANSFORMER	PT202		0
493		80GL17T 28 YS	X'FMR YAO SHENG	PT201		1
494		80GL17T 28 YS	X'FMR YAO SHENG	PT202		1
495		80GL17T 29 L	X'FMR PT-004046	T901		1
496		80GL17T 29 V	XFMR	T901		0
497		80GL17T 29 LS	POWER TRANS	T901		0
498		93G 50460 13	KBP206G 2A 600V	DB901		1
499		93G 50460502	BRIDGE KBP206G 2A 800V	DB901		0
500		93G1100 1052T	BA159GPT D0-41 DIODE 1A	D901		1
501		95G8014 12 35	WIRE HARRNESS	CN902		1
502		705G 780 5720P	D921/D922 ASS'Y			1
503		705G 780 5721P	Q901 ASS'Y			1
504		705G 780 5722P	R908 ASS'Y			1
505		705G 780 5725P	CN901 ASS'Y			1
506		705G 780 5733P	Q203 ASS'Y			1
507		705G 980 88 A1	ASS'Y			1
508		PW1942AUV1SMTP	MAIN BOARD FOR SMT			
509		PW1942AUV1AIP	MAIN BOARD FOR AI			1
510		56G 379 54	NCP1203D60R2G S01C-8 IC	IC901		1
511		56G 608 1	TL1451ACD S01C-16	IC201		1
512		57G 417 4	PMBS3904/PLILIPS	Q204		1
513		57G 417 6	PMBS3906 PNP	Q205		1
514		57G 417 12 T	2N3904S-RTK/PS S0T-23	Q204		0
515		57G 417 13 T	2N3906S-RTK/PS S0T-23	Q205		0
516		57G 760 4	DTA144WKA	Q202		1
517		57G 760 5	DTC144WKA	Q201		1



518		57G 760 4C	RT1P44HC-T112-1 SC-59BY	Q202		0
519		57G 760 5C	RT1N44HC-T112-1 SC-59BY	Q201		0
520		61L0805000	Chip Resistors 00HM	R208		1
521		61L0805000	Chip Resistors 00HM	R209		1
522		61L0805101	CHIPR 100OHM+-5%1/8W	R912		1
523		61L0805102	CHIPR 1K OHM +-5% 1/8W	R924		1
524		61L0805102	CHIPR 1K OHM +-5% 1/8W	R931		1
525		61L0805102	CHIPR 1K OHM +-5% 1/8W	R932		1
526		61L0805103	CHIPR 10KOHM+-5%1/8W	R207		1
527		61L0805103	CHIPR 10KOHM+-5%1/8W	R917		1
528		61L0805123	CHIP 12K OHM 1/8W	R206		1
529		61L0805123	CHIP 12K OHM 1/8W	R214		1
530		61L0805123	CHIP 12K OHM 1/8W	R231		1
531		61L0805163	CHIP 16KOHM 1/8W	R205		1
532		61L0805203	CHIPR 20KOHM +-5% 1/8W	R919		1
533		61L0805220	CHIP 220HM 5% 1/8W	R915		1
534		61L0805221	CHIPR 220 OHM +-5% 1/8W	R202		1
535		61L0805221	CHIPR 220 OHM +-5% 1/8W	R916		1
536		61L0805222	CHIPR 2.2K OHM +-5% 1/8	R910		1
537		61L0805240 1F	CHIPR 2.4KOHM +-1% 1/8W	R201		1
538		61L0805240 1F	CHIPR 2.4KOHM +-1% 1/8W	R203		1
539		61L0805240 1F	CHIPR 2.4KOHM +-1% 1/8W	R933		1
540		61L0805330 2F	CHIP 33KOHM 1/8W/1%	R929		1
541		61L0805360 1F	CHIP 3.6KOHM 1/8W 1%	R930		1
542		61L0805362	CHIP 3.6KOHM 1/8W	R911		1
543		61L0805471	CHIPR 470 OHM +-5% 1/8W	R204		1
544		61L0805471	CHIPR 470 OHM +-5% 1/8W	R230		1
545		61L0805472	CHIPR 4.7K OHM +-5% 1/8	R213		1
546		61L0805472	CHIPR 4.7K OHM +-5% 1/8	R914		1
547		61L0805473	CHIPR 47K OHM +-5% 1/8W	R210		1
548		61L0805510 2F	CHIP 51KOHM 1/8W 1%	R232		1
549		61L0805623	CHIPR 62K OHM +-5% 1/8W	R212		1
550		61L0805680	CHIP 680HM 1/8W	R909		1
551		61L0805681	CHIP 680OHM 1/8W	R229		1
552		61L0805753	75K 1/8W	R913		1
553		61L1206000	CHIPR 00HM+-5% 1/4W	F902		1
554		61L1206000	CHIPR 00HM+-5% 1/4W	R925		1
555		61L1206332	CHIP 3.3KOHM 5% 1/4W	R903		1
556		61L1206332	CHIP 3.3KOHM 5% 1/4W	R904		1
557		61L1206332	CHIP 3.3KOHM 5% 1/4W	R905		1

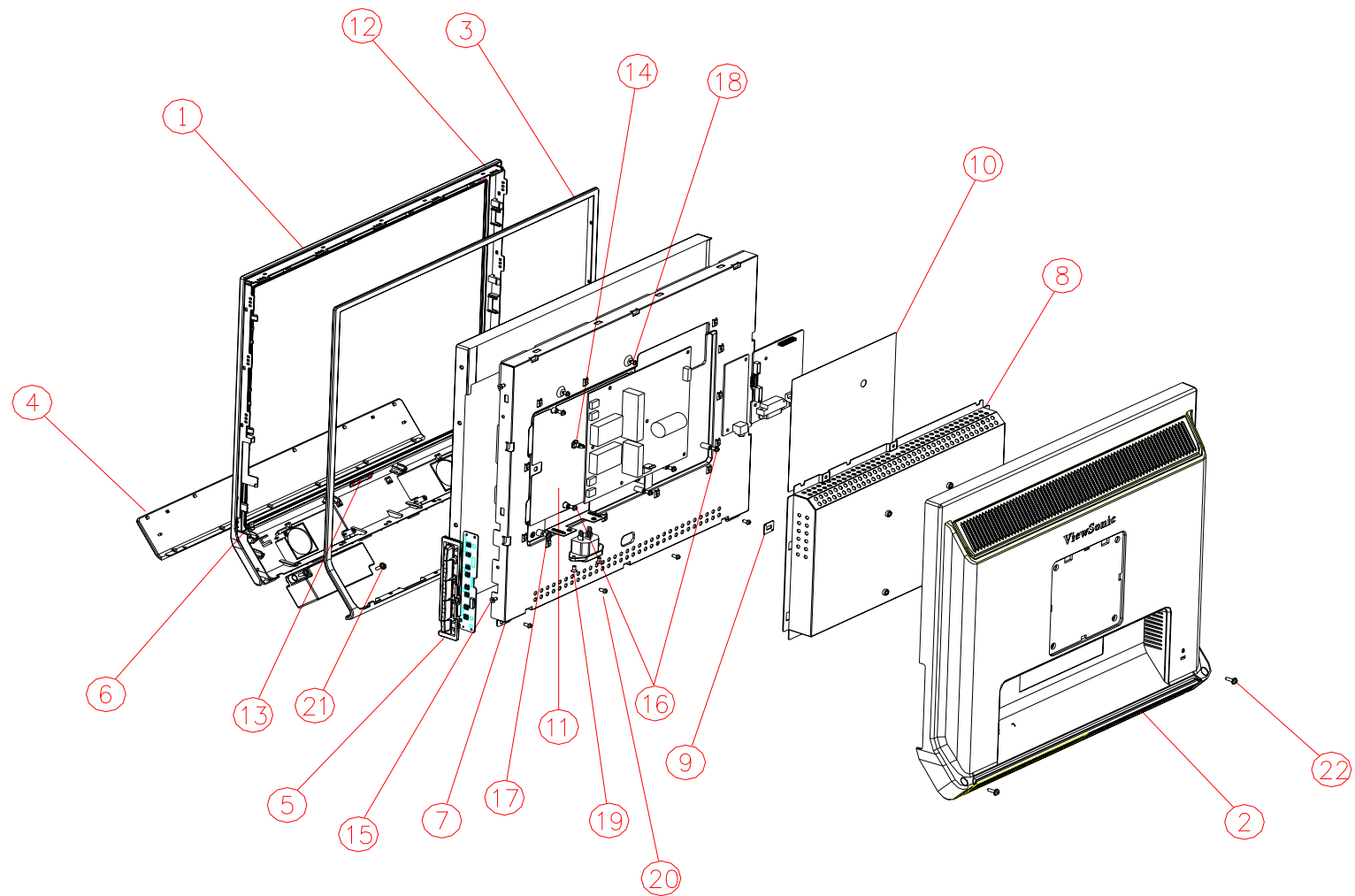
558		61L1206334	330K 1/4W	R900		1
559		61L1206334	330K 1/4W	R901		1
560		61L1206334	330K 1/4W	R902		1
561		65G0805102 32	CHIP 1000PF 50V X7R 080	C912		1
562		65G0805104 22	CHIP 0.1UF 25VX7R 0805	C201		1
563		65G0805104 22	CHIP 0.1UF 25VX7R 0805	C202		1
564		65G0805104 22	CHIP 0.1UF 25VX7R 0805	C204		1
565		65G0805104 22	CHIP 0.1UF 25VX7R 0805	C208		1
566		65G0805104 32	CHIP 0.1UF 50V X7R 0805	C907		1
567		65G0805104 32	CHIP 0.1UF 50V X7R 0805	C927		1
568		65G0805104 32	CHIP 0.1UF 50V X7R 0805	C928		1
569		65G0805104 32	CHIP 0.1UF 50V X7R 0805	C929		1
570		65G0805105 22	CHIP 1UF 25V X7R 0805	C205		1
571		65G0805105 22	CHIP 1UF 25V X7R 0805	C210		1
572		65G0805105 22	CHIP 1UF 25V X7R 0805	C223		1
573		65G0805331 31	330PF 50V NPO	C207		1
574		65G0805471 31	CHIP 470PF 50V NPO	C911		1
575		65G0805474 22	CHIP 0.47UF 25V Y5V 080	C222		1
576		65G0805474 22	CHIP 0.47UF 25V Y5V 080	C932		1
577		93G 60264	B340A DO-214AC	D201		0
578		93G 6432S	1N4148W DIODE	D210		1
579		93G 6432S	1N4148W DIODE	D903		1
580		93G 6432S	1N4148W DIODE	D923		1
581		93G 6432S	1N4148W DIODE	D924		1
582		93G 6432V	DIODE LL4148 GS08	D210		0
583		93G 6432V	DIODE LL4148 GS08	D903		0
584		93G 6432V	DIODE LL4148 GS08	D923		0
585		93G 6432V	DIODE LL4148 GS08	D924		0
586		93G 39S 8 T	RLZ11B LLDS	ZD201		1
587		93G 39S 25 T	RLZ5.1B ROHM	ZD902		1
588		93G 39S 25 T	RLZ5.1B ROHM	ZD905		1
589		93G 39S 38 T	PTZ9.1B ROHM	ZD903		1
590		93G 39S 40 T	RLZ13B ROHM	ZD904		1
591		93G 39S 44 T	RLZ18B LLDS	ZD901		1
592		93G3004 4	DIODE RB050L-40	D201		1
593		PW1942AUV1AIP	MAIN BOARD FOR AI			
594		6G 31502	1.5MM RIVET			16
595		71G 55 9 T	铁氧体磁珠	J914		1
596		84G 56 1	FUSE 2A 250V BY WICKMAN	F901		1
597		93G1020 752T	UF4003PT DO-41 DIODE 1A	D902		1

598		715G1492 1	PWPC			1
599		95G 90 23	TINCOATEDCOPPER	J900		1
600		95G 90 23	TINCOATEDCOPPER	J901		1
601		95G 90 23	TINCOATEDCOPPER	J902		1
602		95G 90 23	TINCOATEDCOPPER	J903		1
603		95G 90 23	TINCOATEDCOPPER	J906		1
604		95G 90 23	TINCOATEDCOPPER	J907		1
605		95G 90 23	TINCOATEDCOPPER	J908		1
606		95G 90 23	TINCOATEDCOPPER	J909		1
607		95G 90 23	TINCOATEDCOPPER	J910		1
608		95G 90 23	TINCOATEDCOPPER	J911		1
609		95G 90 23	TINCOATEDCOPPER	J912		1
610		95G 90 23	TINCOATEDCOPPER	J915		1
611		95G 90 23	TINCOATEDCOPPER	J916		1
612		95G 90 23	TINCOATEDCOPPER	J917		1
613		95G 90 23	TINCOATEDCOPPER	J918		1
614		95G 90 23	TINCOATEDCOPPER	J919		1
615		95G 90 23	TINCOATEDCOPPER	J921		1
616		61G 17210252T	1KOHM 5% 1/4W	R225		1
617		61G 17210252T	1KOHM 5% 1/4W	R226		1
618		61G 17210252T	1KOHM 5% 1/4W	R227		1
619		61G 17210252T	1KOHM 5% 1/4W	R228		1
620		61G 17218252T	1.8KOHM 5% 1/4W	R221		1
621		61G 17218252T	1.8KOHM 5% 1/4W	R222		1
622		61G 17218252T	1.8KOHM 5% 1/4W	R223		1
623		61G 17218252T	1.8KOHM 5% 1/4W	R224		1
624		61G 17256152T	5600HM 5% 1/4W	R923		1
625		61G175L47052T	470HM +-5% 1/2W	R921		1
626		61G175L47052T	470HM +-5% 1/2W	R922		1
627		65G517K102 5T	1000PF 10% Y5P 500V	C922		1
628		67G 2151007NT	10UF 50V	C908		1
629		67G 215330 3T	33UF +-20% 50V 105 L0	C209		1
630		67G215Y1007KT	LOW ESR EC10UF 50V	C908		0
631		93G 64 1152T	DIODE 1N4148 D0-35	D202		1
632		93G 64 1152T	DIODE 1N4148 D0-35	D203		1
633		93G 64 1152T	DIODE 1N4148 D0-35	D204		1
634		93G 64 1152T	DIODE 1N4148 D0-35	D205		1
635		93G 64 1152T	DIODE 1N4148 D0-35	D206		1
636		93G 64 1152T	DIODE 1N4148 D0-35	D207		1
637		93G 64 1152T	DIODE 1N4148 D0-35	D208		1

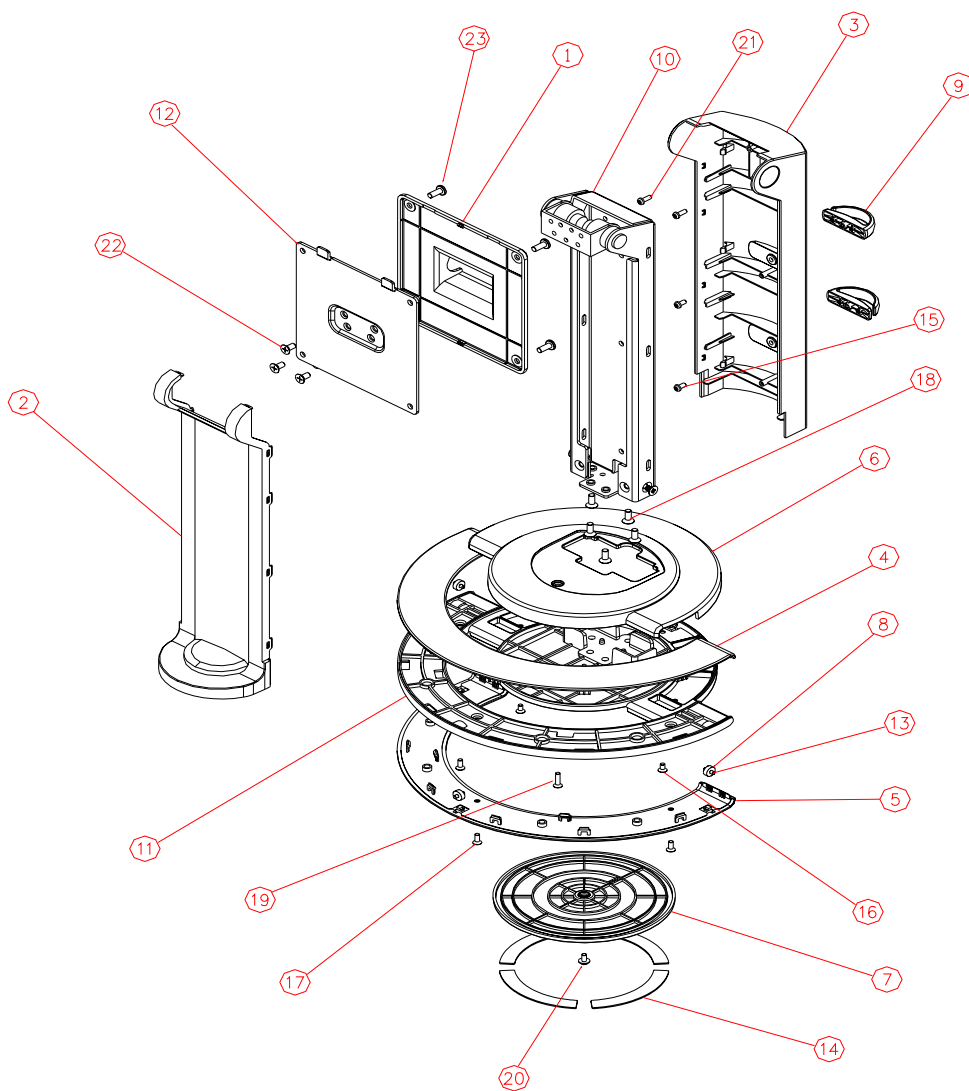
638		93G 64 1152T	DIODE 1N4148 D0-35	D209		1
639		56G 158 10 T	IC AZ431AZ-AE1 T0-92	IC903		0
640		56G 158 12	KIA431A-AT/P T0-92 IC	IC903		1
641		57G 419 PP T	2PC945P	Q903		1
642		57G 420 PP T	TRANSISTOR 2PA733P	Q902		1
643		65G517K102 5T	1000PF 10% Y5P 500V	C921		1
644		705G 780 5720P	D921/D922 ASS'Y			
645		51G 200 1	散热油			2
646		90G6240 2	HEAT SINK			1
647		93G 60236	FMB-26L T0-220 DIODE	D922		1
648		93G 60238	DIODE 10A 150V FCH10A15	D921		0
649		93G 60239	DIODE FME-210B T0-220	D921		1
650		93G1506 2	DIODE 15A 60V FMW-2156	D922		0
651		M1G1730 8128	SCREW			2
652		705G 780 5721P	Q901 ASS'Y			
653		51G 200 1	散热油			2
654		57G 667 30	2SK2645-54MR T0-220F	Q901		1
655		57G 724 11	STP9NK65ZFP T0-220FP M0	Q901		0
656		90G6240 1	HEAT SINK			1
657		M1G1730 8128	SCREW			1
658		705G 780 5722P	R908 ASS'Y			
659		61G152M10458G	100K OHM 5% 2W	R908		1
660		96G 29 6	SHRINK TUBE UL/CSA			1
661		705G 780 5725P	CN901 ASS'Y			
662		87G 501 7 RF GP	AC SOCKET			1
663		95G 900584	WIRE HARNESS			1
664		95G8021 3 11	HARNESS 100M			1
665		96G 29 6	SHRINK TUBE UL/CSA			1
666		705G 780 5733P	Q203 ASS'Y			
667		15G6284 1	PLATE			1
668		51G 200 1	散热油			0.2
669		57G 763 12	AOU401L T0-251	Q203		1
670		90G6259 1	HEAT SINK			1
671		AM1G1730 6128	SCREW			1
672		705G 980 88 A1	ASS'Y			
673		51G 200 1	散热油			2
674		51G 200 1	散热油			2
675		57G 761 7	TRANSISTOR KTD1691/P	Q206		1
676		57G 761 7	TRANSISTOR KTD1691/P	Q207		1
677		90G6259 1	HEAT SINK			1

678		90G6259 1	HEAT SINK			1
679		M1G1730 8128	SCREW			1
680		M1G1730 8128	SCREW			1

## 8. Exploded Diagram And Spare Parts List



ITEM	DESCRIPTION	PART NUMBER	Q'TY
1	BEZEL	34G1687-KR-B	1
2	REAR COVER	34G1688-KR-B	1
3	COSMETIC TOP	34G1689-AKD-B	1
4	COSMETIC BOTTOM	34G1690-KD-B	1
5	FUNCTION BUTTON	33G4915-KR-L	1
6	POWER LENS	33G4916-1	1
7	MAINFRAME	15G8235-1	1
8	MAIN SHIELD	85G713-1	1
9	KENSINGTON BRACKET	15G8239-1	1
10	MYLAR SHEET TOP	52G6025-11-907	1
11	MYLAR SHEET BOTTOM	52G6025-11-908	1
12	BIRD LOGO (E015-006)	23G3178709-6A	1
13	VIEWSONIC LOGO (E015-016-1)	23G3178709-4A	1
14	SPACER SUPPORT	11G800-2	1
15	SCREW M3X6	M1G130-6-120	4
16	SCREW M3X6	M1G170-6-128	9
17	SCREW M4X6	M1G1140-6-128	1
18	SCREW M3X4	M1G330-4-128	2
19	SCREW M3X6	M1G130-6-120	2
20	SCREW M3X6	Q1G1030-6-120	4
21	SCREW M3X10	Q1G1030-10-120	4
22	SCREW M3X10	Q1G1030-10-120	2



ITEM	DESCRIPTION	PART NUMBER	Q'TY
1	VESA COVER	34G1691-KR-B	1
2	STAND FRONT	34G1692-KR-B	1
3	STAND REAR	34G1693-KR-B	1
4	BASE FRONT TOP	34G1694-KR-B	1
5	BASE FRONT BOTTOM	34G1695-KR-B	1
6	BASE	34G1696-KR-B	1
7	SWIVEL COVER	34G1697-KR-X	1
8	ROLLER	33G4917-KR-X	1
9	CABLE CLIP	33G4918-KR-X	1
10	HINGE ASSY	37G547-1	1
11	BASE DIECASTING	20G036-1	1
12	VESA PLATE	15G8237-1	1
13	ROLLER SHAFT	15G8004-1	4
14	RUBBER PAD	12G434-1	4
15	SCREW-M3X6	Q1G330-6-120	2
16	SCREW-M3X6	Q1G130-6-47	3
17	SCREW-M3X8	Q1G130-8-120	3
18	SCREW-M4X10	M1G140-10-120	5
19	SCREW-M3X12	Q1G130-12-120	1
20	SCREW-M3X6	M1G1030-6-225	1
21	SCREW-M3X8	Q1G330-8-120	2
22	SCREW-M4X8	M1G140-8-120	4
23	SCREW-M4X10	M1G2940-10-225	4



## 9. Disassemble Process

### 9.1 Units Disassemble Process

#### 9.1.1 Tools



- ✧ Glove
- ✧ Big cross screwdriver
- ✧ Small cross screwdriver
- ✧ Prize equipment or abandoned IC card
- ✧ Screw box
- ✧ Cushion
- ✧ Six angle sleeve spanner

#### 9.1.2 Disassemble process

- 1、Tide up the worktable, spread straight cushion, put the monitor on it, the front side adown.(**Picture 1**)
- 2、Disassemble the 4 screws that fix the stand, remove the stand..(**Picture 2, 3, 4**)
- 3、Disassemble the 2 screws of the back cover. ( **Picture 5** )
- 4、Use equipment or abandoned IC card to prize up the bezel through the bottom flute, as showed in the following the **picture 6**, and rip up the back cover downwards.( as showed in the following the **picture 7,8**)
- 5、Disassemble the 6 screw M3\*6MM through six angle sleeve spanner, showed in the following **picture 9**.
- 6、Disassemble the 2 fixed screws in the shield, remove the shield as the direction arrowhead showed, refer to the following **picture ,10**.
- 7、Disassemble the 5 screws and 4 pins of the PWPC board, remove the PWPC board.(symbolized the following **picture 11** with red color)
- 8、Disassemble the 3 screws and 3 pins of the main board, remove the main board. (symbolized the following **picture 11** with blue color)
- 9、Disassemble the 2 screws of the audio board, remove the audio board. (symbolized the following **picture 11,12** with yellow color)
- 10、Disassemble the 4 screws of the speaker, remove the speaker, refer to the following **picture 13**
- 11、Disassemble the 4 fixed screws of the main frame, as showed in the following the **picture 14**
- 12、Disassemble the connect pins of the key board, as showed in the following the **picture 15**. remove the bezel as the direction arrowhead showed, refer to the following **picture ,16,17**.
- 13、Disassemble the 4 fixed screws of the panel, remove the main frame, as showed in the following the **picture 18,19**. Do not damage the cable of the panel.
- 14、That's all. The disassemble process of the unit is over.

### 9.1.3 Show pictures :



( Picture 1 )



( Picture 2 )



( Picture 3 )



( Picture 4 )



( Picture 5 )



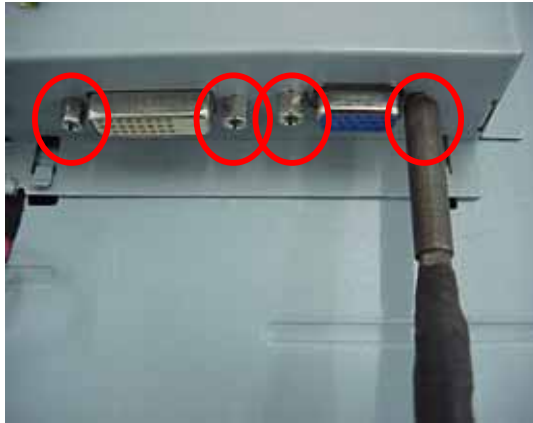
( Picture 6 )



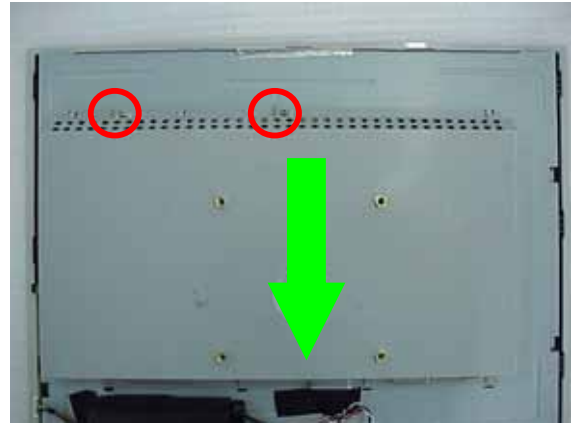
( Picture 7 )



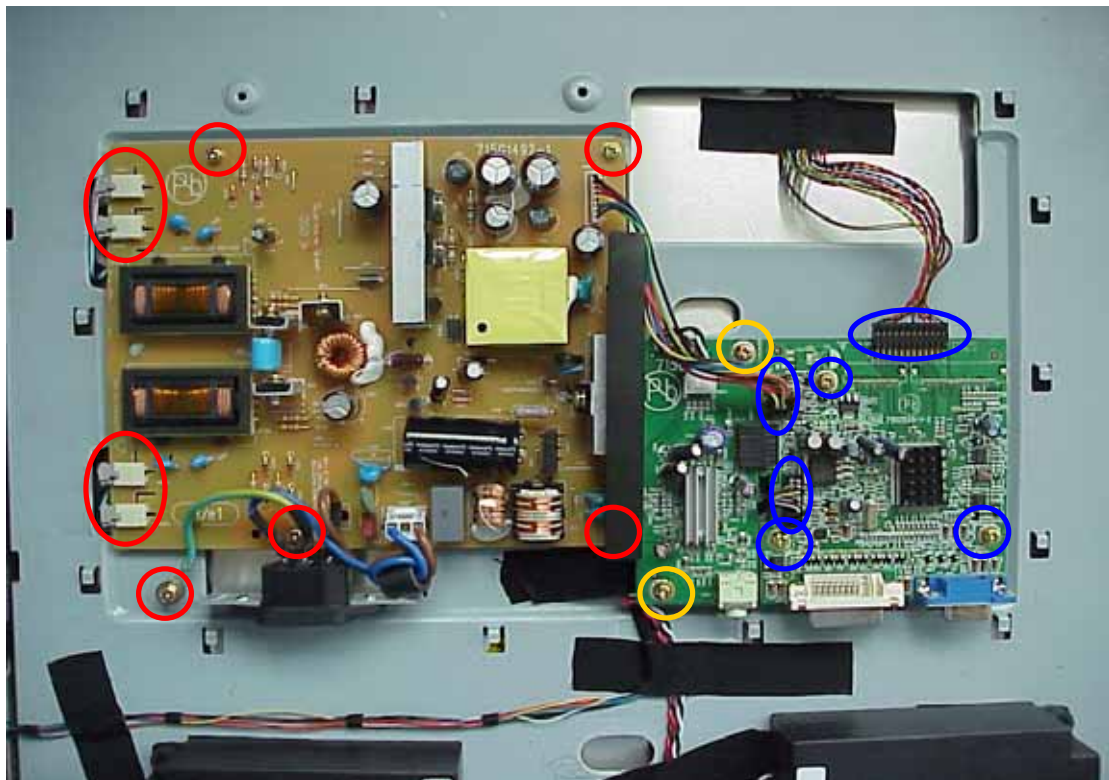
( Picture 8 )



( Picture 9 )



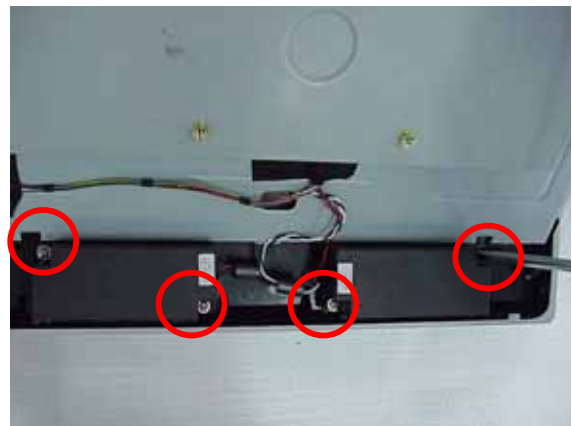
( Picture 10 )



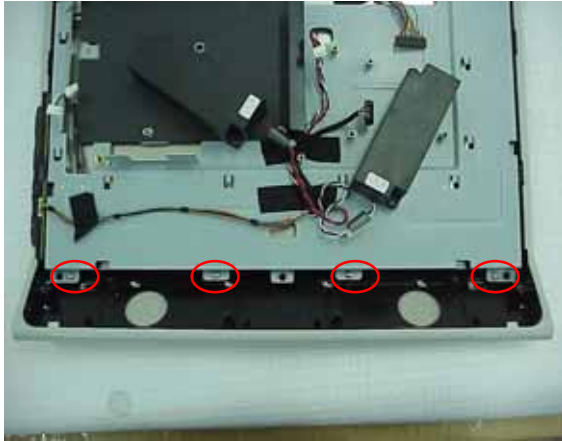
( Picture 11 )



( Picture 12 )



( Picture 13 )



( Picture 14 )



( Picture 15 )



( Picture 16 )



( Picture 17 )



( Picture 18 )



( Picture 19 )



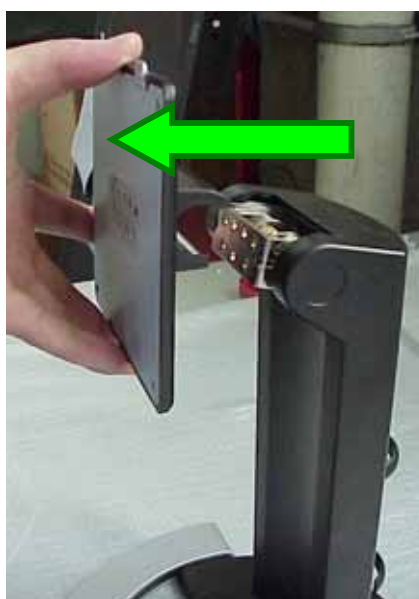
( Picture 20 )



## 9.2 Stand A'ssy Disassemble Process



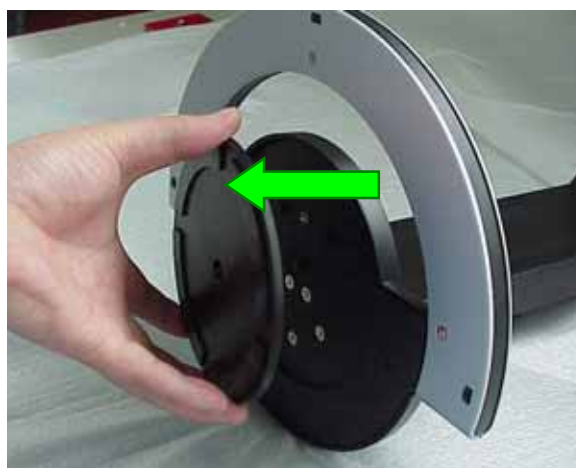
( Picture 1 )



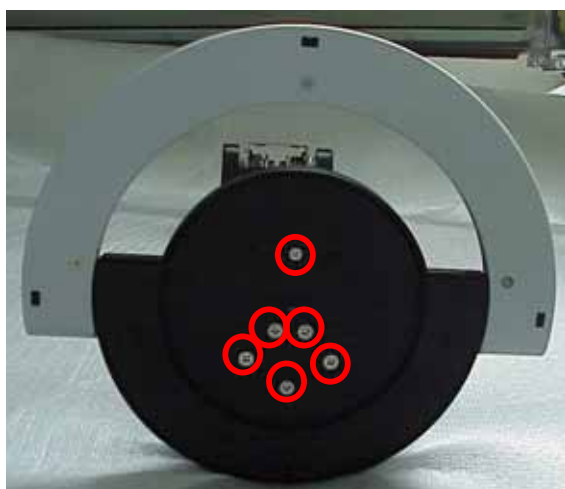
( Picture 2 )



( Picture 3 )



( Picture 4 )



( Picture 5 )



( Picture 6 )



( Picture 7 )



( Picture 8 )



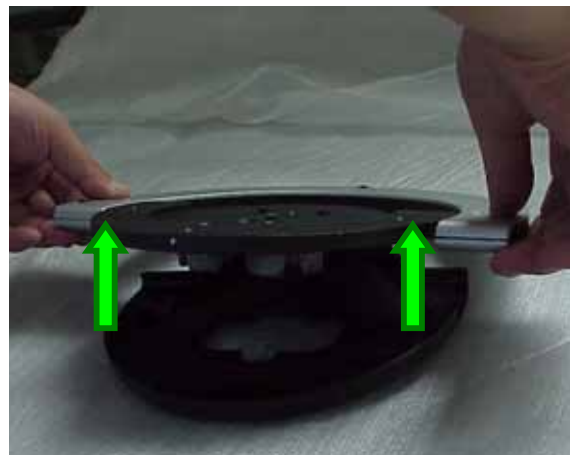
( Picture 9 )



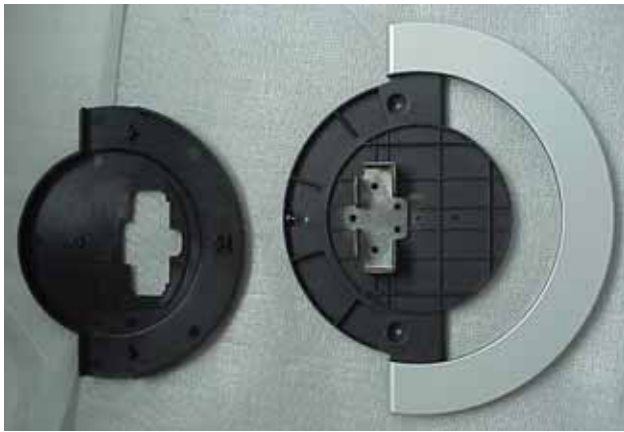
( Picture 10 )



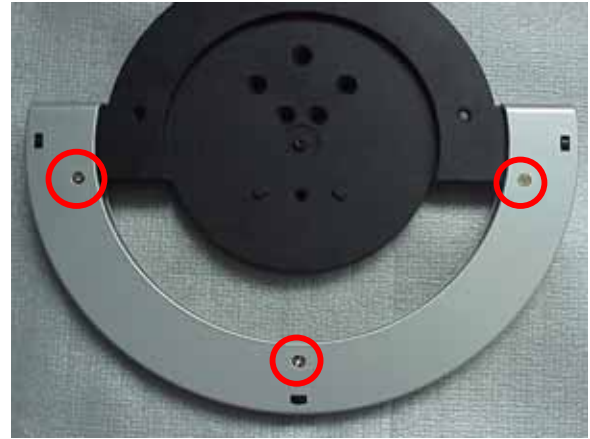
( Picture 11 )



( Pictures 12 )



( Picture 13 )



( Picture 14 )



( Picture 15 )



( Picture 16 )

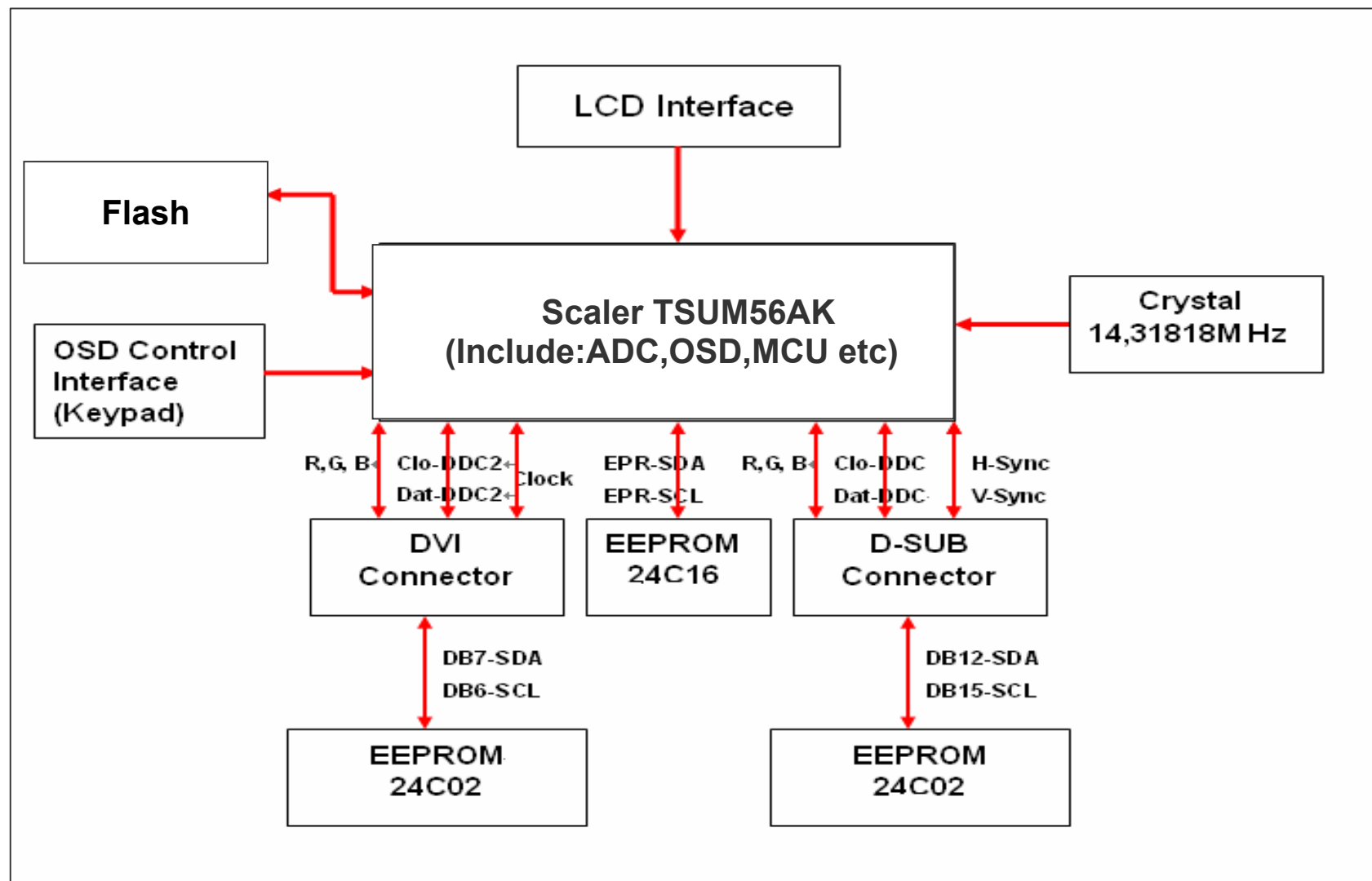


( Picture 17 )



( Picture 17 )

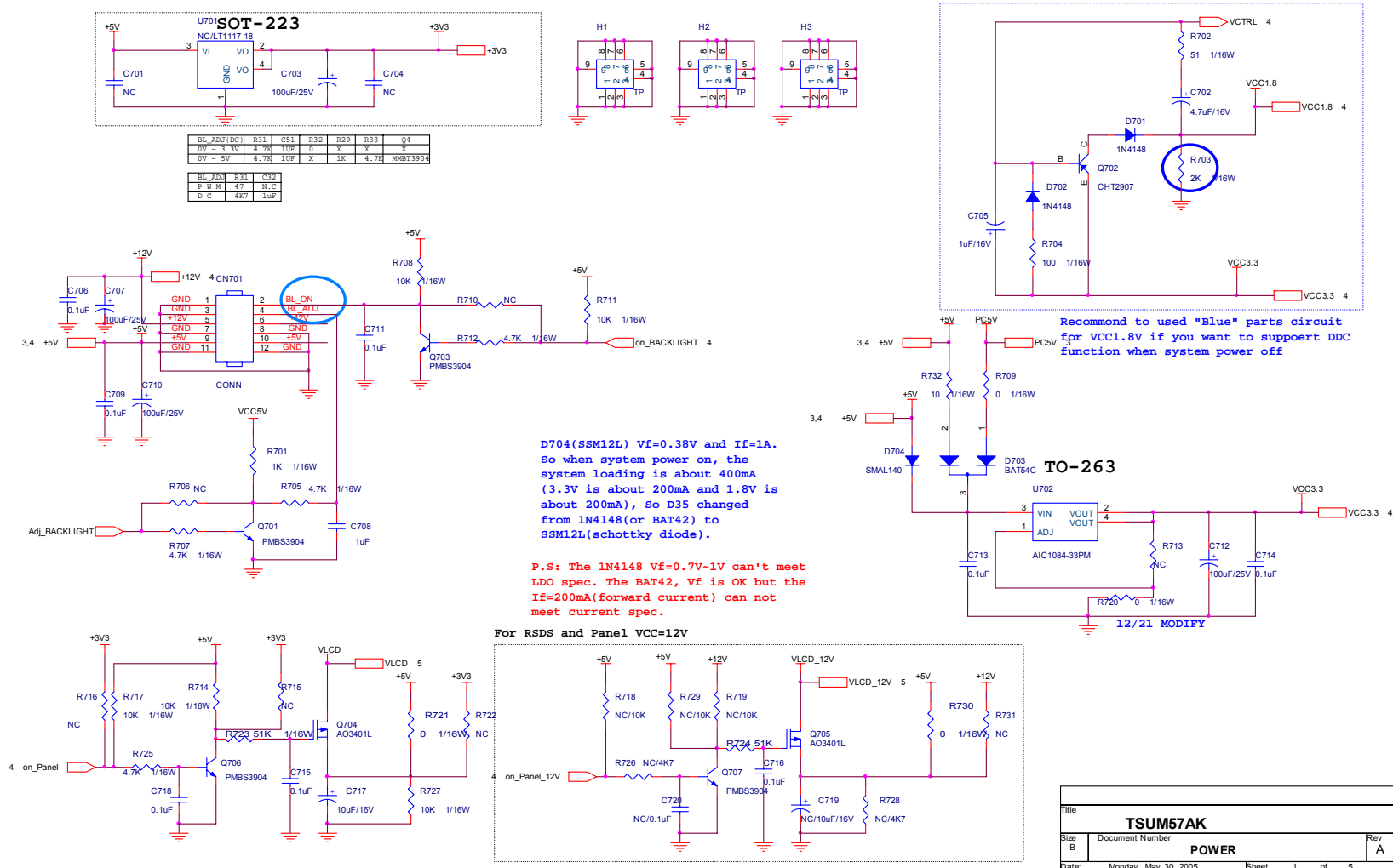
## 10. Block Diagram



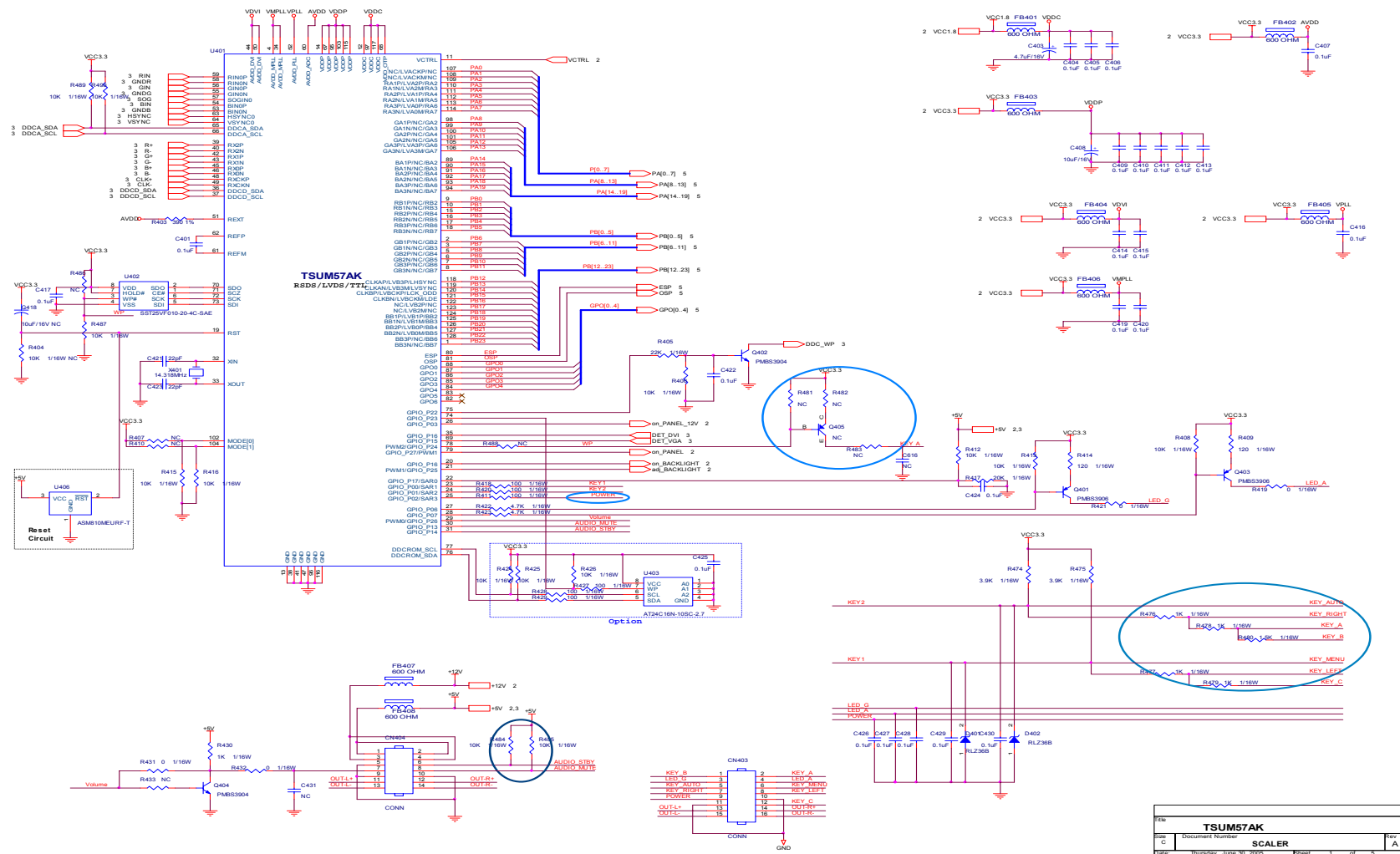


# 11. Schematic Diagram

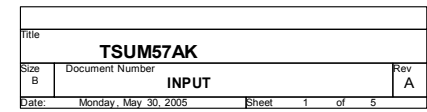
## 11.1 Power



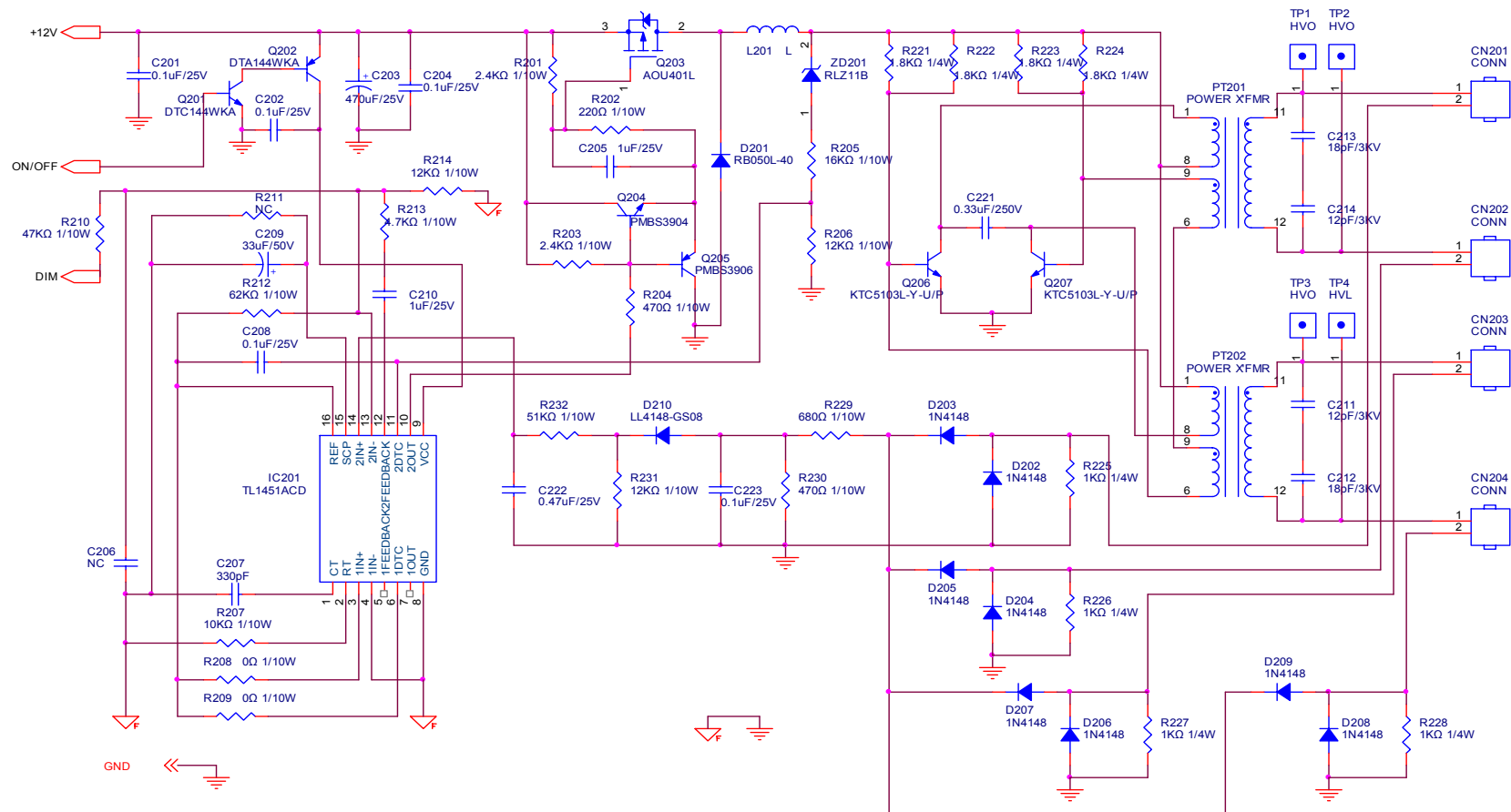
## 11.2 Scaler



### 11.3 INPUT



## 11.4 Inverter

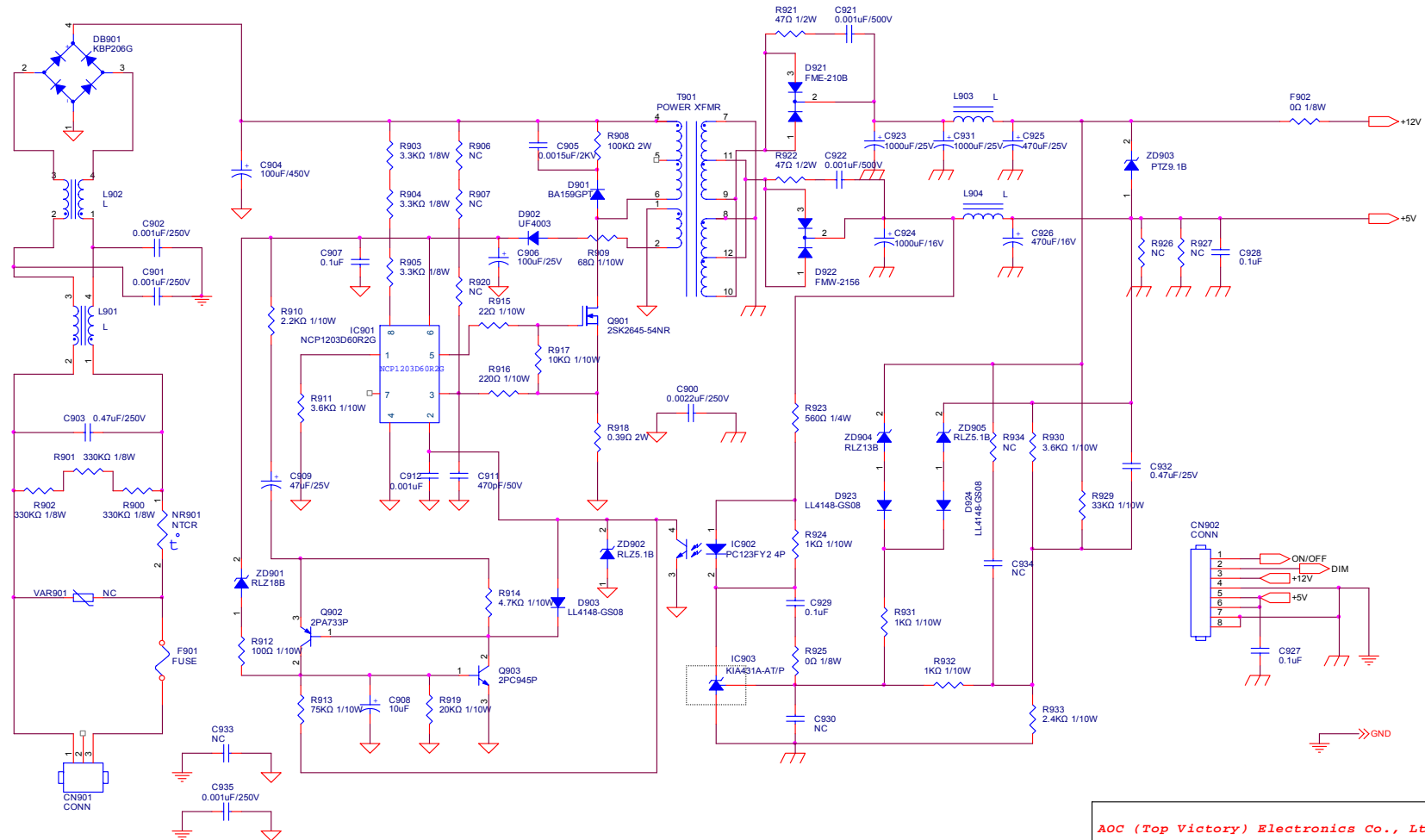


AOC (Top Victory) Electronics Co., Ltd.			
Title			
2. FOR 17" 4 LAMPS INVERTER			
Size	Document Number	Rev	
	PWPC1742QDV1P(715G1492-1)	A	
Date:	Tuesday, July 05, 2005	Sheet	2 of 2

is power GND

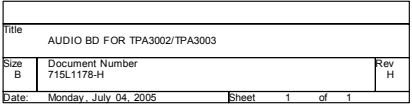
is signal GND

## 11.5 A-D Power

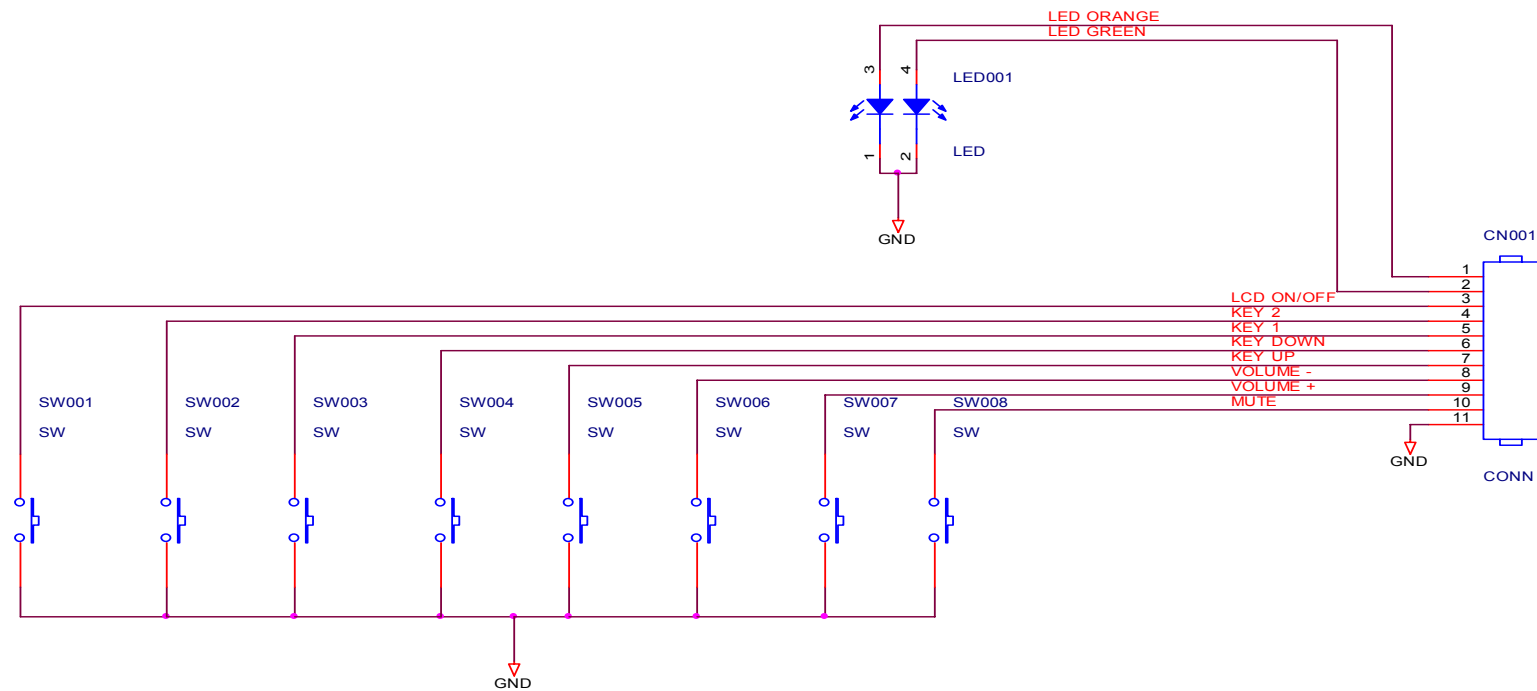


AOC (Top Victory) Electronics Co., Ltd.			
Title 1.POWER OUTPUT 12V & 5V			
Size B	Document Number	PWPC1742QDV1P(715G1492-1)	Rev A
Date: Tuesday, July 05, 2005	Sheet	1	of 2

## 11.6 Audio



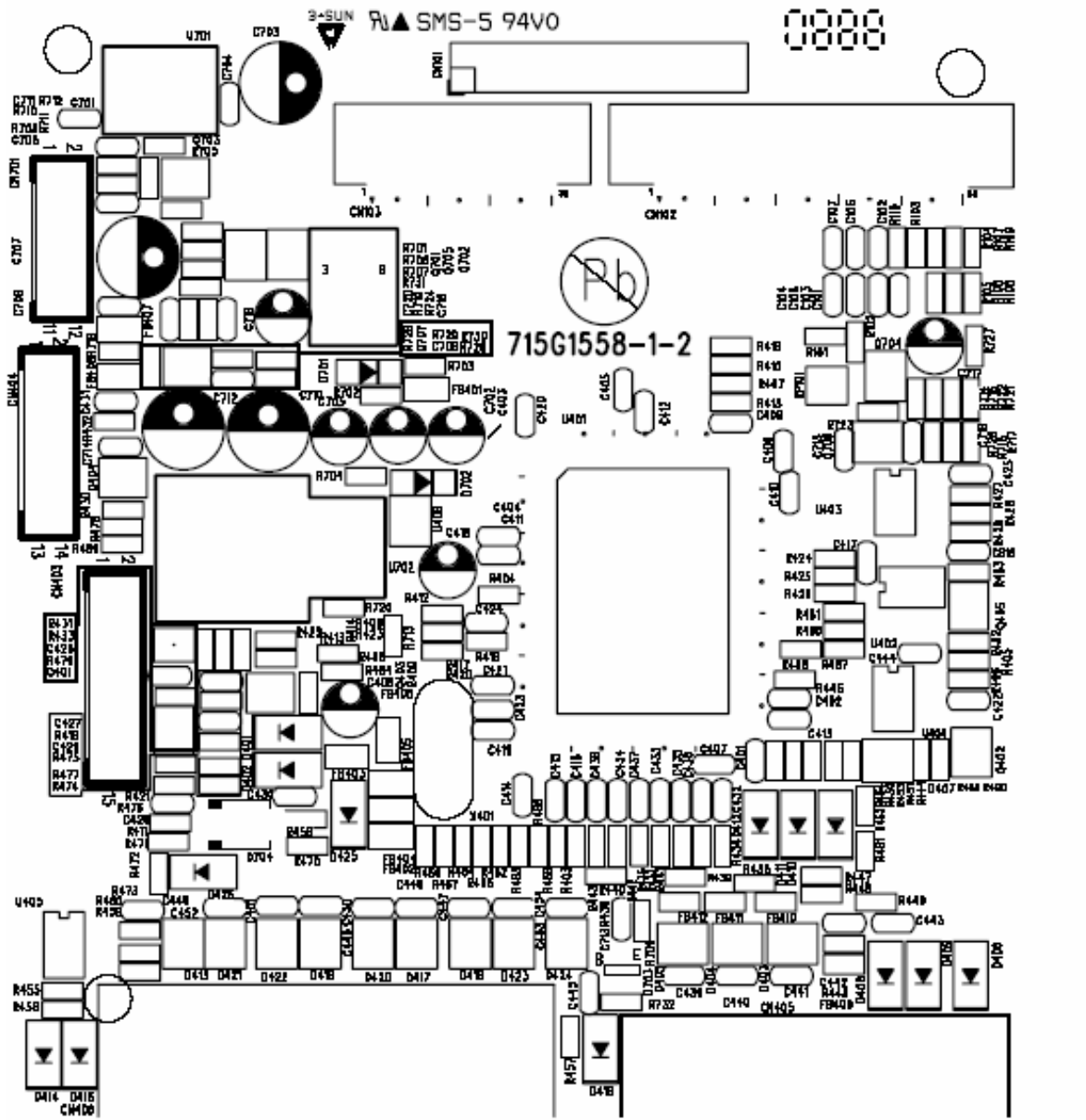
11.7 Key Pad



AOC (Top Victory) Electronics Co., Ltd.		
Title		
KEY PAD (For Viewsonic)		
Size A	Document Number	Rev B
CONTROL KEY PAD (Switch)		
Date:	Thursday, May 05, 2005	Sheet 1 of 1

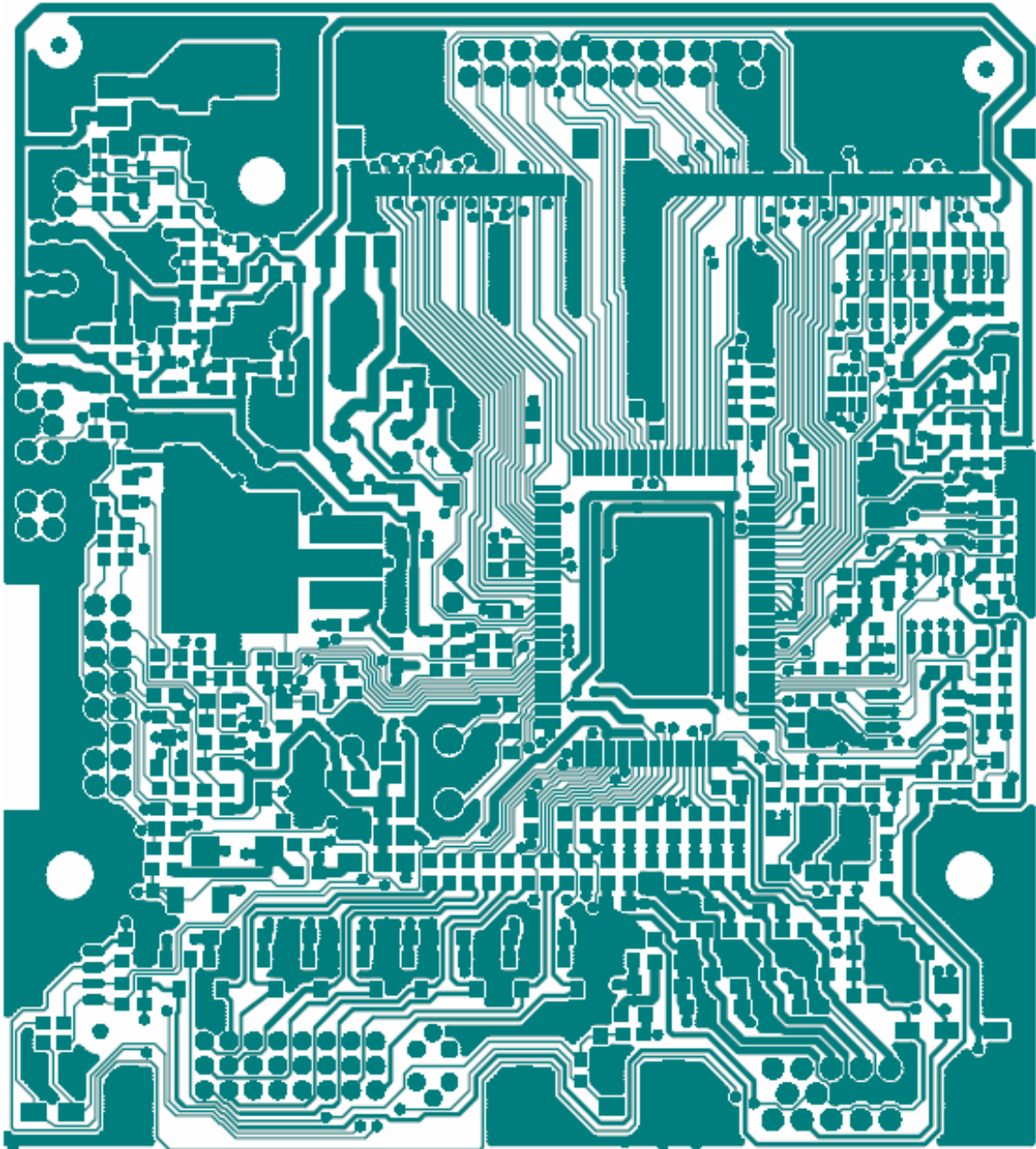
## 12. PCB Layout Diagram

### 12.1 MAIN BOARD PCB TOP VIEW

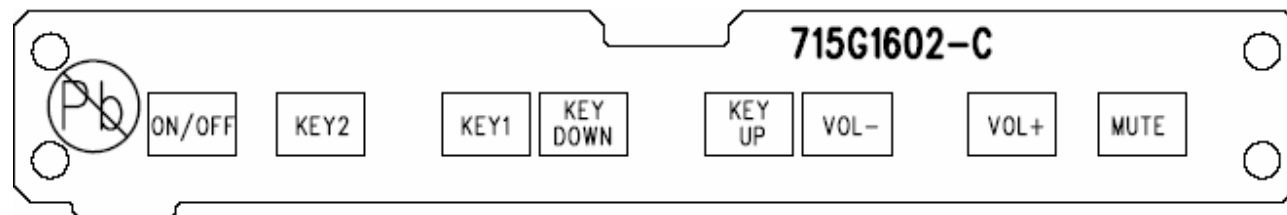




## 12.2 MAIN BOARD PCB BUTTON VIEW



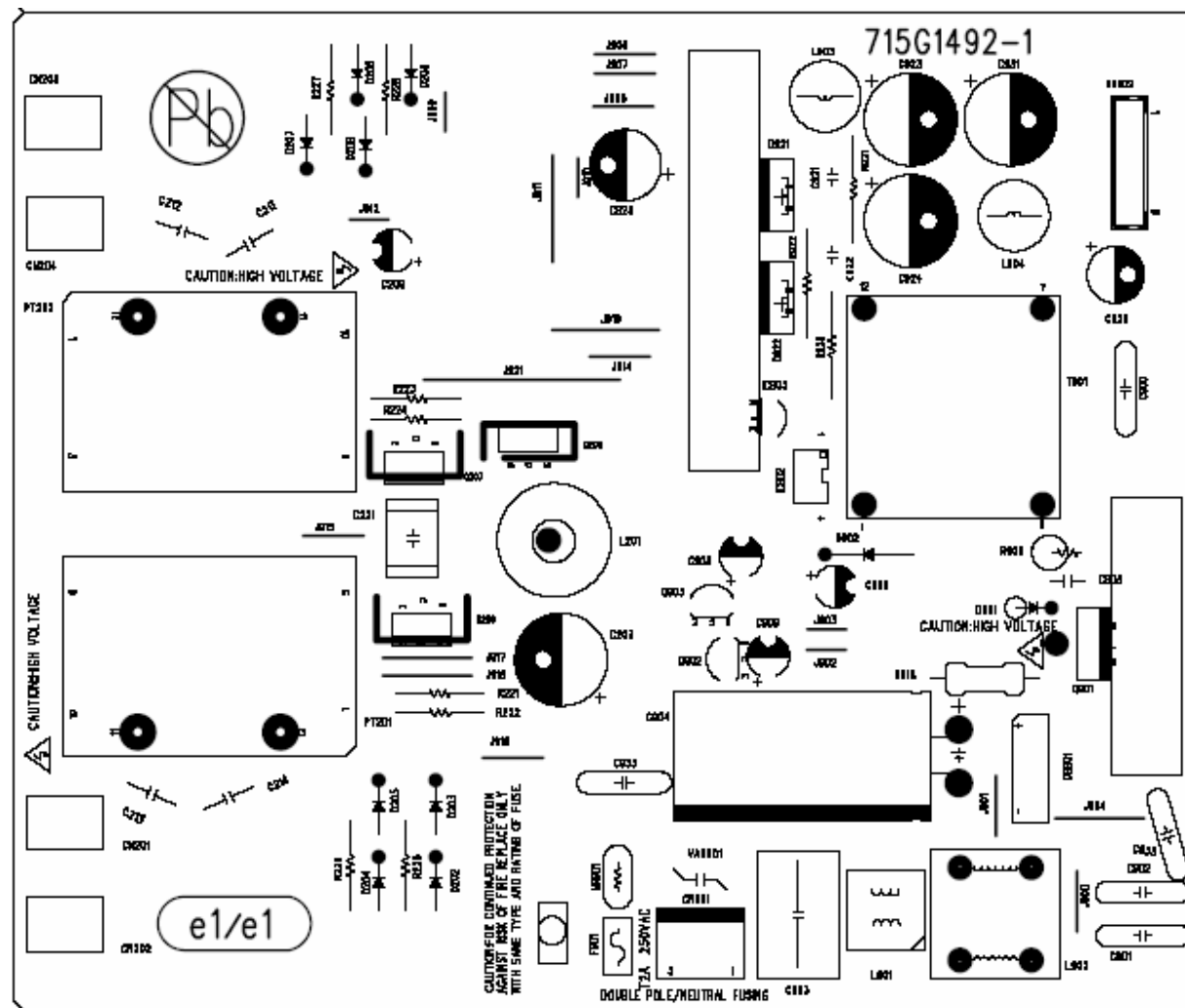
### 12.3 KEYBOARD TOP VIEW



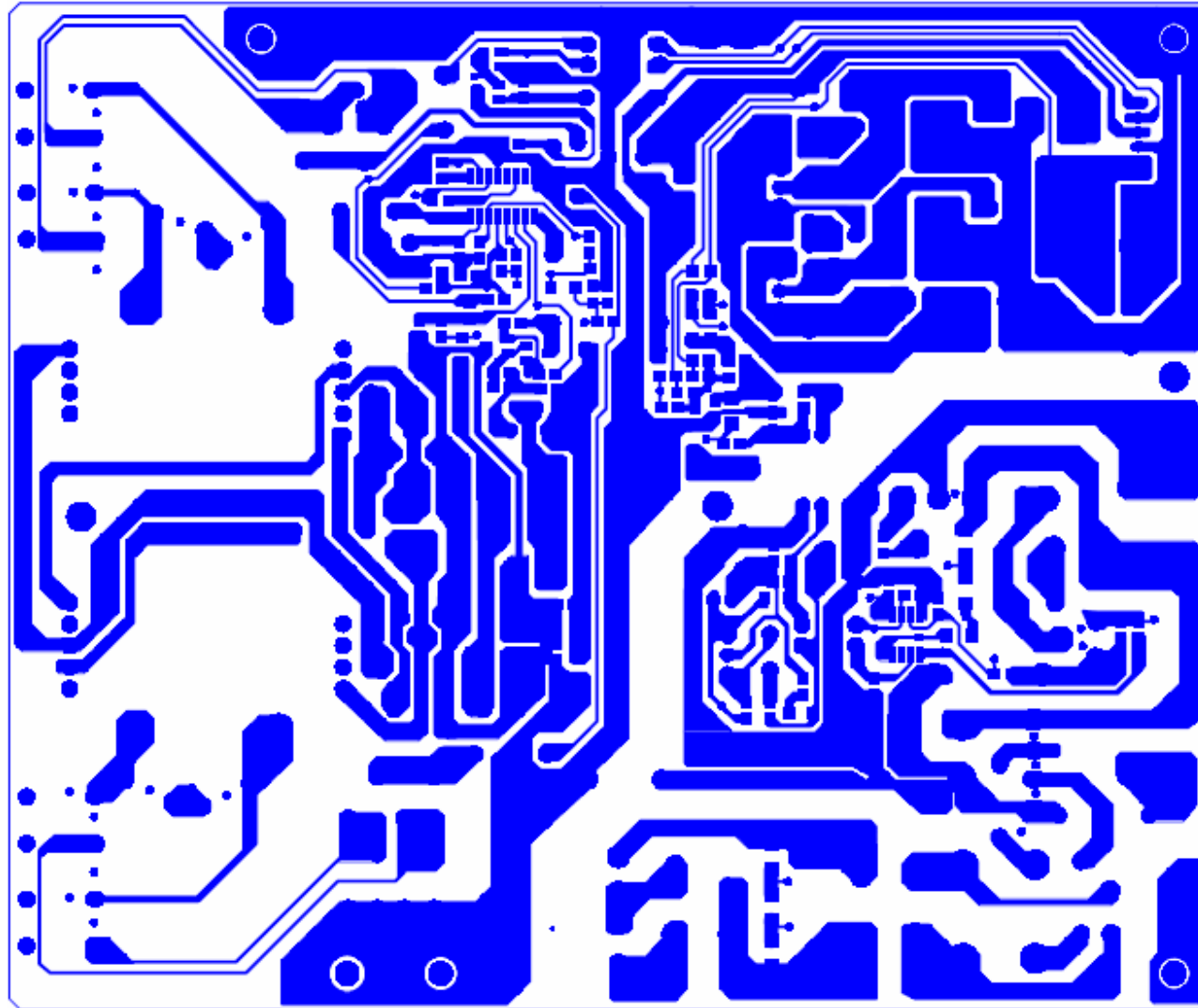
### 12.4 KEYBOARD BUTTON VIEW



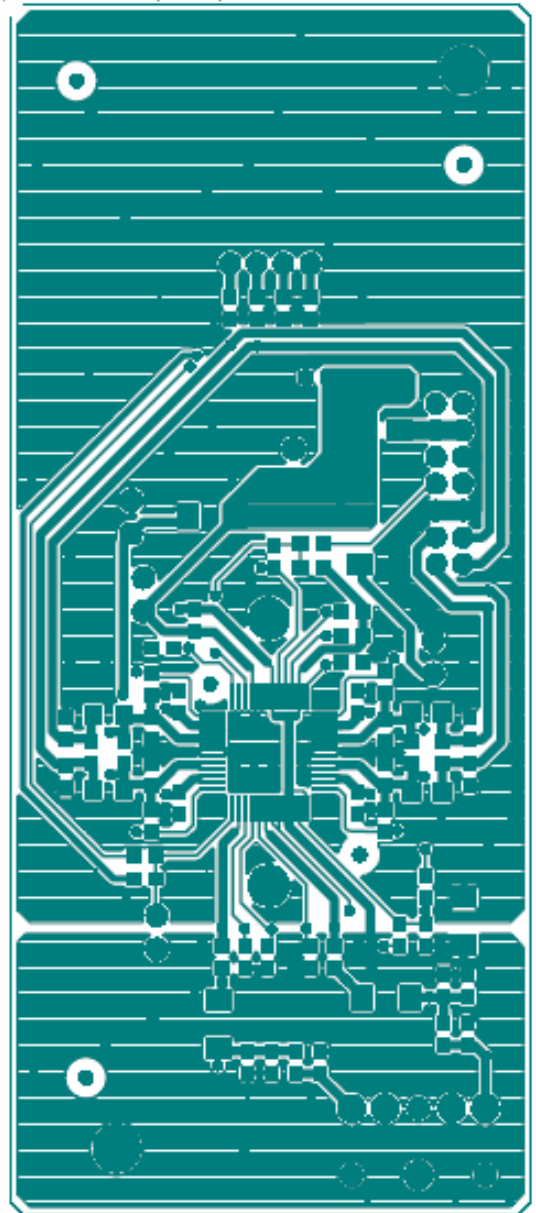
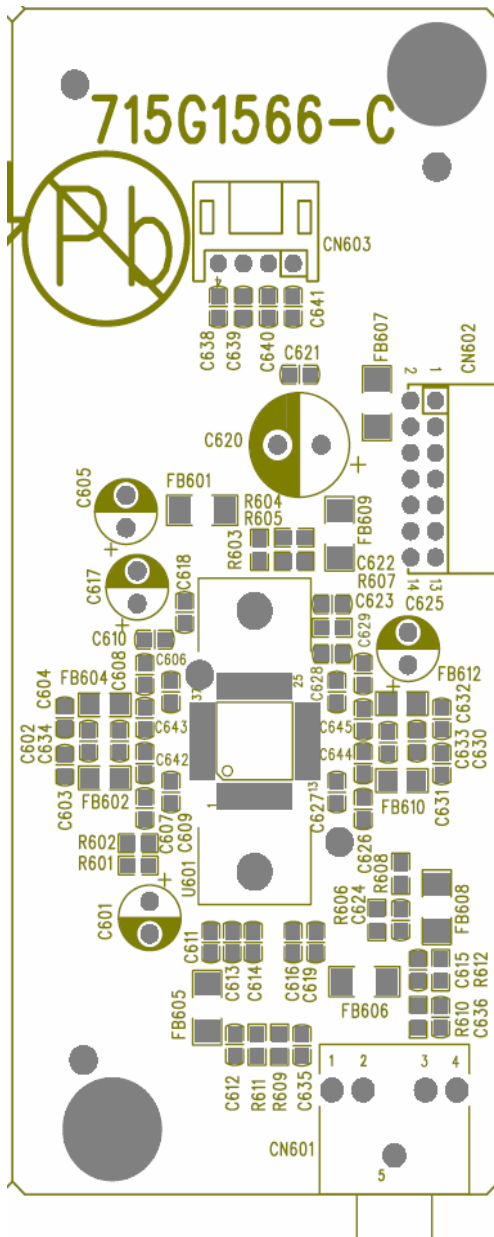
## 12.5 POWER PCB TOP VIEW



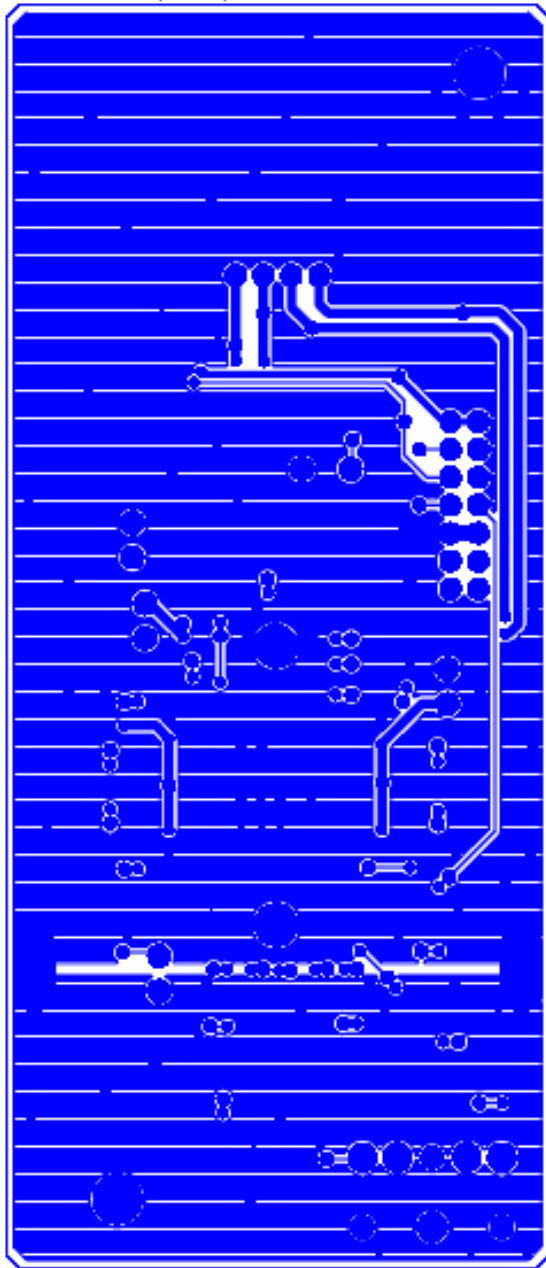
## 12.6 POWER PCB BUTTON VIEW



## 12.6 AUDIO PCB TOP VIEW



## 12.6 AUDIO PCB BUTTON VIEW



**\* Reader's Response \***

Dear Readers:

Thank you in advance for your feedback on our Service Manual, which allows continuous improvement of our products. We would appreciate your completion of the Assessment Matrix below, for return to ViewSonic Corporation.

**Assessment**

A. What do you think about the content after reading **VG920** Service Manual?

<b>Unit</b>	<b>Excellent</b>	<b>Good</b>	<b>Fair</b>	<b>Bad</b>
1. Precautions And Safety Notice				
2. Specification				
3. Front Panel Control and Indicators				
4. Circuit Description				
5. Adjustment Procedure				
6. Troubleshooting Flow Chart				
7. Recommended Spare Parts List				
8. Exploded Diagram And Spare Parts List				
9. Block Diagram				
10. Schematic Diagram				
11. PCB Layout Diagram				

B. Are you satisfied with the **VG920** Service Manual?

<b>Item</b>	<b>Excellent</b>	<b>Good</b>	<b>Fair</b>	<b>Bad</b>
1. Service Manual Content				
2. Service Manual Layout				
3. The form and listing				

C. Do you have any opinion and suggestion about this Service Manual?

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